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BEFORE THE ARIZONA CORPORATION COMMISSION

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**COMMISSIONERS**

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IN THE MATTER OF THE APPLICATION OF ) DOCKET NO. E-04204A-11-0267  
UNS ELECTRIC, INC. FOR APPROVAL OF ITS )  
2012 RENEWABLE ENERGY STANDARD AND )  
TARIFF IMPLEMENTATION PLAN AND )  
DISTRIBUTED ENERGY ADMINISTRATIVE ) **NOTICE OF ERRATA**  
PLAN AND REQUEST FOR RESET OF )  
RENEWABLE ENERGY ADJUSTOR )

On July 1, 2011, UNS Electric, Inc. ("UNS Electric" or "Company") filed its 2012 Renewable Energy Standard and Tariff ("REST") Implementation Plan. UNS Electric hereby files a corrected version of its REST Plan and related Exhibits 1, 2, and 5. Redlined versions of the corrected REST Plan and Exhibits are being provided directly to Arizona Corporation Commission Staff.

RESPECTFULLY SUBMITTED this 29<sup>th</sup> day of July 2011.

UNS ELECTRIC, INC.

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JUL 29 2011

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Original and 13 copies of the foregoing  
filed this 27th day of July 2011 with:

Docket Control  
Arizona Corporation Commission  
1200 West Washington Street  
Phoenix, Arizona 85007

Copy of the foregoing hand-delivered/mailed  
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By Mary Appolits



**UNS Electric, Inc.**

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**2012 Renewable Energy Standard  
Implementation Plan**

**TABLE OF CONTENTS**

- I. Executive Summary ..... 1
- II. 2012 UNS Electric RES Implementation Plan Components ..... 2
  - A. Utility Scale Renewable Generation (existing and purchased).....2
  - B. Bright Arizona Solar Buildout Plan.....3
  - C. Bright Arizona Community Solar Program .....5
  - D. Distributed Generation Incentive Programs.....5
    - i. Renewable Energy Credit Purchase Program .....6
    - ii. School Vocational Program .....7
  - E. Market Cost of Comparable Conventional Generation .....8
- III. The Plan Budget..... 8
- IV. The 2012 RES Tariff..... 9
- V. Research and Development..... 11
  - A. AzRISE..... 11
  - B. Compliance with Decision No. 72034 ..... 12

## **ATTACHED EXHIBITS**

- Exhibit 1 Energy and Demand by Technology Forecast
- Exhibit 2 RES Budget
- Exhibit 3 Definition of Market Cost of Comparable Conventional Generation
- Exhibit 4 Above Market Cost of Comparable Conventional Generation by Technology  
(Confidential)
- Exhibit 5 Renewable Energy Credit Purchase Program
- Exhibit 6 REST– TS1 Renewable Energy Standard Tariff
- Exhibit 7 REST – TS2 Renewable Energy Standard Tariff (Customer Self-Directed Renewable  
Energy Option)

## **I. EXECUTIVE SUMMARY.**

UNS Electric, Inc. (“UNS Electric” or “Company”) has prepared its 2012 Implementation Plan (“Plan”) in compliance with the Arizona Corporation Commission’s (“Commission”) Renewable Energy Standard (“RES”) rules. UNS Electric is committed to reaching the RES Renewable Energy Requirements for 2012 and beyond, and the Plan sets forth the Company’s cost-effective strategy for meeting its RES requirements. The key components of the Plan include the renewable energy resources the Company intends to add through 2016, the programs the Company plans to implement, the amount budgeted for each program and the customer funding and related RES surcharge under the Plan. UNS Electric requests that the Commission approve the steps outlined in its Plan, and deem the requested budgeted amounts and resulting customer charges as just and reasonable as they are necessary in order for UNS Electric to comply with the RES rules.

Pursuant to Arizona Administrative Code Rule 14-2-1801, *et seq.*, UNS Electric must obtain 3.5% of its 2012 annual retail sales from renewable resources by 2012, 30% of which must come from Distributed Generation (“DG”). In order to meet these requirements, UNS Electric will utilize existing utility-scale renewable generation, Purchase Power Agreements (“PPA”) with renewable developers, utility-owned renewable generation, and DG incentive programs; the resulting renewable portfolio will include solar and wind projects.

UNS Electric’s Plan is designed to achieve 2012 RES compliance as cost effectively as possible. The estimated cost for 2012 RES related projects and programs is \$9.5 million. Under the proposed incentive levels (which have been modified from the 2011 Plan) and anticipated renewable generation requirements, this amount is expected to remain relatively flat through 2016, with a five year total of \$41 million. RES funding is necessary to cover the cost of utility-scale renewable generation, incentive payments for distributed generation resources, marketing expenses, program implementation, and administration costs. At this time, UNS Electric proposes recovery of approximately \$9.5 million through the RES tariff.

UNS Electric believes that this Plan is a realistic and cost-effective strategy for complying with the RES requirements and provides the Commission an important opportunity to foster renewable generation for the benefit of the Company's customers. Therefore, UNS Electric requests that the Commission approve the Plan and find that it is just and reasonable and in the public interest.

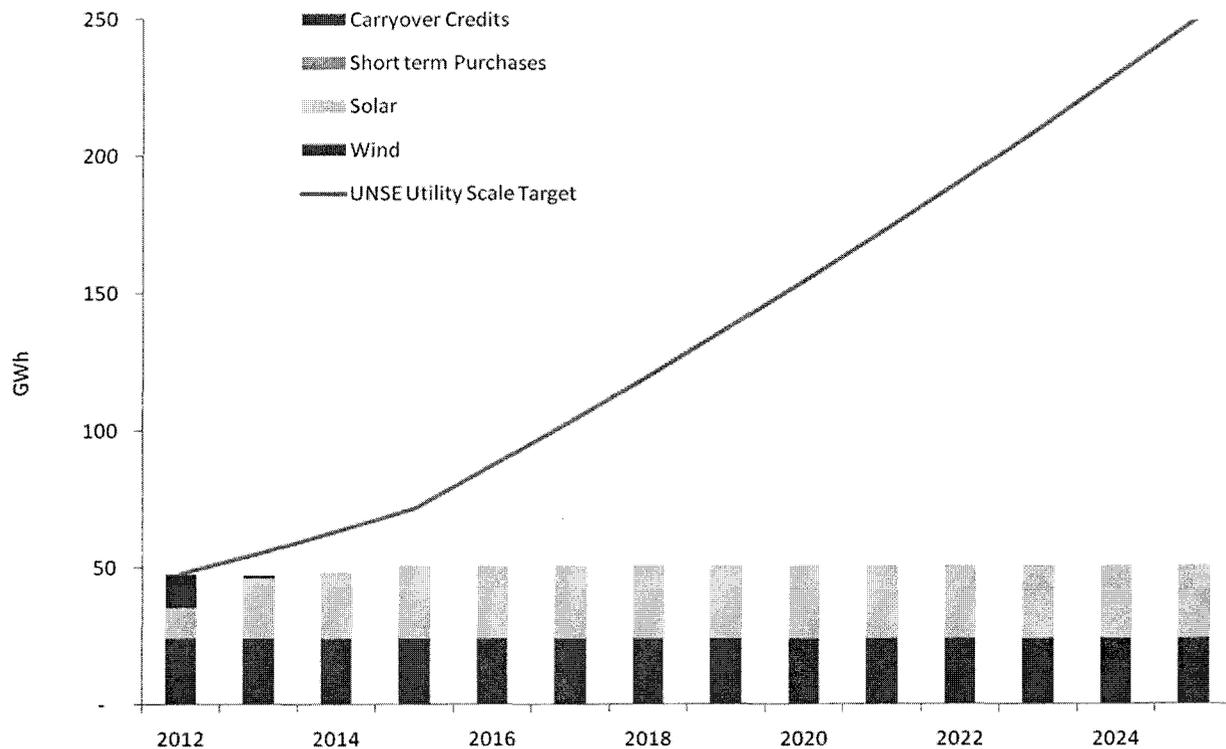
## **II. UNS ELECTRIC 2012 IMPLEMENTATION PLAN COMPONENTS.**

UNS Electric's total renewable generation requirement for 2012 is 3.5% of retail sales (or 68,210 megawatt hours ("MWh")). The RES targets two resource categories, utility-scale generation and DG. UNS Electric plans to expand its utility-scale generation portfolio and enhance its Bright Arizona Solar Buildout Plan. With respect to DG, UNS Electric proposes to modify its Renewable Energy Credit Purchase Program and implement a School Vocational Program, a DG program that will provide photovoltaic ("PV") systems ranging in size up to ten kilowatts ("kW") to eligible schools in the service territory, along with education curriculum.

### **A. Utility-Scale Renewable Generation.**

UNS Electric will meet its 2012 utility-scale requirement with an anticipated renewable generation capacity of 35,000 MWh. UNS Electric will meet this target through a combination of self-owned generation and PPAs entered into by the Company. Currently, UNS Electric has a PPA for a project with Western Wind that was approved by the Commission on April 1, 2010. This project is located in the Kingman area and will generate an estimated 24,000 MWh of wind power and 850 MWh of solar power, annually. The Company also has a 5 MW solar PPA with Solon, along with a 1.2 MW utility-owned solar project built by Solon that will generate approximately 11,000 MWh annually and allow UNS Electric to meet and possibly exceed its utility-scale RES requirement in 2012. Please see Chart 1 for the utility scale RES requirements and expected resources for UNS Electric.

**Chart 1. Renewable Energy Standard Targets.**



**B. Bright Arizona Solar Buildout Plan.**

UNS Electric’s solar ownership plan (“Bright Arizona Solar Buildout Plan” or “Buildout Plan”), represents the small portion of the utility-scale requirement that will be met through a utility-owned program. UNS Electric’s proposed investments in its Buildout Plan were previously approved in the Company’s last rate case, Decision No. 71914 (September 30, 2010). UNS Electric is not proposing any changes to the Buildout Plan for 2012, but the program remains an essential component of the Company’s renewable strategy as utility-owned projects provide balance to the Company’s renewable portfolio as well as an additional amount of certainty for the continued development of renewable energy.

As approved, the Buildout Plan allows utility ownership of approximately 20% of the renewable energy needed to meet the utility-scale generation portion of the RES; the balance of the requirement is met through PPAs. UNS Electric will invest \$5 million per year in utility-owned PV installations from 2011 through 2014, as shown in Table 1, utilizing a competitive

procurement and deployment process, with an estimated 1.25 MW of PV installed per year using an average installed per watt price of \$4.00.

**Table 1. Bright Arizona Solar Buildout Plan Investment Timeline.**

<b>Year Installed</b>	<b>Initial Recovery Year</b>	<b>Annual Capital Investment</b>	<b>MW Capacity</b>
2011	2012	\$5,000,000	1.25 MW
2012	2013	\$5,000,000	1.25 MW
2013	2014	\$5,000,000	1.25 MW
2014	2015	\$5,000,000	1.25 MW
<b>4-Year Total</b>		<b>\$20,000,000</b>	<b>5 MW</b>

The annual revenue requirement for the approved investment (here, the term “revenue requirement connotes recurring costs related to the capital investment, including return on investment, depreciation, property taxes, and operations and maintenance (“O & M”) expenses), are delineated in Table 2. UNS Electric is proposing to recover these amounts through the RES adjustor until the investment is included in rate base. Each column shown in Table 2 represents the expected revenue requirement for UNS Electric’s capital investment from the prior year. It should be noted that the property tax revenue requirement for each investment is recovered in year 2 for each project (i.e., property tax collected in 2013 is from 2011 capital investment). The columns are not cumulative; please refer to Table 3 for expected cumulative annual revenue requirements.

**Table 2. Revenue Requirement for the Bright Arizona Solar Buildout Plan.**

<b>Revenue Requirement</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Carrying Costs	\$365,169	\$172,966	\$365,169	\$691,862
Book Depreciation	\$250,000	\$125,000	\$250,000	\$500,000
O & M	\$50,000	\$25,375	\$50,000	\$101,500
<b>Total Revenue Requirement</b>	<b>\$665,169</b>	<b>\$323,341</b>	<b>\$665,169</b>	<b>\$1,293,362</b>

Annual estimates of the Buildout Plan’s revenue requirement (to be included in the REST adjustor) are shown in Table 3.

**Table 3. Estimated Annual REST Budget<sup>1</sup> for the Bright Arizona Solar Buildout Plan.**

<b>Utility Owned Solar Projects by Year</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>2012</b>	\$665,169	\$157,048		
<b>2013</b>		\$166,293		
<b>2014</b>			\$665,169	\$628,193
<b>2015</b>				\$665,169
<b>Annual Revenue Requirement</b>	\$665,169	\$323,341	\$665,169	\$1,293,362

**C. Bright Arizona Community Solar Program.**

UNS Electric will continue the Bright Arizona Community Solar Program, which was approved in Decision No. 72034 (December 10, 2010). This program, which consists of a voluntary customer tariff for customers wishing to displace a portion of their conventional energy use with solar power, fulfills a portion of the Company’s DG requirement. Funds received from participants in the Community Solar Program are credited back to the REST budget. At the time of this filing, UNS Electric will utilize solar power to generate the energy for this program from a combination of both utility-owned projects and from PPAs.

**D. Distributed Generation Incentive Program.**

UNS Electric looks forward to continuing the successful implementation of its DG programs. The Plan proposes \$5.6 million in funding for the incentive programs, with annual increases to the program budget to accommodate both the increased DG energy target, and customer demand. The Plan uses the RES required 50/50 split of the DG requirement between the residential and commercial sectors, as shown in Exhibit 1. The DG program requirements and incentive levels are outlined in the Renewable Energy Credit Purchase Program (“RECPP”), included as Exhibit 5. Each DG program is described below.

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<sup>1</sup> All values in 000s.

**i. Renewable Energy Credit Purchase Program.**

The RECPP portion of UNS Electric’s Plan targets three areas: (1) residential up-front incentives (“UFI”); (2) non-residential UFIs; and (3) non-residential performance based incentives (“PBI”). The projected cost of the RECPP is \$5.5 million: \$2.6 million for residential UFIs, \$0.97 million for small commercial UFIs, and \$1.8 million for large commercial PBIs. UNS Electric will fully satisfy the commercial portion of the RES DG requirement through its RECPP budget. Table 4 outlines the 2012 incentive budget for each customer segment, including the MWh and MW achieved.

**Table 4. UFI/PBI Budget and Forecast.**

<b>Customer Segment</b>	<b>2012 Budget</b>	<b>Annual MWh</b>	<b>Annual MW</b>
Residential UFI	\$2,644,741	3,062	1.5
Small Commercial UFI	\$971,584	1,225	0.7
Large Commercial PBI	\$1,837,072	1,531	0.875

UNS Electric has continued to experience success with its UFI and PBI programs under the approved 2011 incentive levels. Thus, for 2012, UNS Electric believes it would be appropriate to continue the same incentive levels. Residential incentives will remain at \$1.60 per watt and small commercial incentives will remain at \$1.50 per watt, with the exception of residential leased systems, which will be offered at \$1.00 per watt. The commercial hot water UFI-limit will remain at 400,000 kWh. The small commercial UFI budget will continue to be separated from the residential UFI and commercial PBI budgets in order to ensure its viability. Technical requirements for the RECPP will be updated, and three categories for larger PV systems will be implemented. Incentives for these larger PV systems will be lowered to align them with current prices, as shown in Table 5. For more details on the RECPP, please see the attached Exhibit 5.

**Table 5. Production Based Incentive Categories.**

PBI Category	Max REC Price
70-200 kW DC	\$0.125
201-400 kW DC	\$0.105
401 kW DC and Greater	\$0.091

In order to maintain programs going throughout the year, UNS Electric is also proposing an automatic trigger to further reduce incentives if the annualized pace of compliance for the residential and commercial UFI programs is exceeded early, as shown in Table 6.

**Table 6. Automatic Incentive Reductions.**

Customer Segment	2011 Incentive	2012 Incentive	First Trigger (60% compliance on or before 6/30/2012)
Residential UFI*	\$1.60/watt	\$1.60/watt	\$1.35/watt
Small Commercial UFI	\$1.30/watt	\$1.30/watt	\$1.05/watt

\*Excluding leased systems, which will be offered at \$1.00/watt.

**ii. School Vocational Program.**

UNS Electric is re-proposing its School Vocational Program for 2012. The School Program was previously proposed in UNS Electric’s 2011 Plan REST Plan, but the Commission requested that UNS Electric review the success of the program in Tucson Electric Power Company’s (“TEP”) service territory prior to implementing its own program.

UNS Electric has evaluated TEP’s Schools Vocational Program and determined that it was extremely well received. TEP has systems of varying sizes that have been (or are scheduled to be) given to thirteen different schools, along with an education curriculum. TEP’s Program has shows that, in light of the recent budget cuts that have greatly affected the Public School Districts, these donations are greatly appreciated as they not only bring solar education to the schools, but also provide net-metered rate relief to cash-strapped school districts. UNS Electric

expects the same level of success in its service territory, and therefore encourages the Commission to approve this program for UNS Electric.

UNS Electric's School Program will provide three systems ranging in size up to ten kilowatts to eligible schools in the service territory. UNS Electric will supply and install the necessary system equipment in addition to creating and facilitating a vocational training program in coordination with state energy program training efforts supported by American Reinvestment and Recovery Act funds. The Program is designed so that the number of eligible schools in a school district is proportional to the size of the district within UNS Electric's service territory to ensure that each district is eligible to receive at least one system. UNS Electric will work closely with district officials to determine appropriate sites. The estimated cost of this project is \$300,000.

**F. Market Cost of Comparable Conventional Generation.**

Consistent with the RES rules, UNS Electric calculates program expenses using the Market Cost of Comparable Conventional Generation ("MCCCG"). Details on the methodology for the MCCCG calculation are included in the attached Exhibit 3. The annual MCCCG rates are calculated in advance and stated as a single dollar per megawatt hour value by technology type. The expenses are based on the PPAs pricing after subtracting the corresponding MCCCG based on projected hourly energy profiles and are included in Exhibit 4 (confidential). The profiles are determined by UNS Electric's production cost model in coordination with the Company's annual Purchase Power and Fuel Adjustment Clause ("PPFAC") filing. The MCCCG will be included for wind, PV systems, concentrated solar with storage, and bio-fueled renewable resources.

**III. THE PLAN BUDGET.**

As stated previously, the cost to implement UNS Electric's Plan will be \$9.5 million. The Plan's detailed budget is attached as Exhibit 2. Exhibit 2 includes a breakdown of the costs

for renewable energy, the DG programs, research and development, outside services support and reporting, technology, and marketing. Table 7 includes a high level Plan budget.

**Table 7. Plan Budget by Category.**

Utility Scale	\$2,791,639
Residential UFI	\$2,644,741
Commercial UFI	\$971,584
Commercial PBI	\$1,837,072
School Vocational & Other Training	\$350,000
Marketing & Outreach	\$100,000
Other Costs (Metering, I.T., Reporting & Labor, and R&D)	\$781,680
<b>TOTAL</b>	<b>\$9,476,715</b>

**IV. The 2012 RES TARIFF.**

The Plan's tariff is set forth in the attached Exhibit 6.<sup>2</sup> UNS Electric's Plan will require a tariff of \$0.010259/kWh, with customer caps by class. The caps were developed using a previously approved methodology (proportional cap allocation). Under that methodology, the caps for all customer classes are being increased slightly. Table 8 (i) details the Company's approved budget for 2011 and proposed budget for 2012 delineated by rate class and (ii) sets forth the currently approved customer class caps and the caps proposed for the 2012 Plan.

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<sup>2</sup> Additionally, the Customer Self-Directed Tariff is set forth in the attached Exhibit 7.

**Table 8. 2010/2012 RES Budget by Rate Class.**

<b>Rate Class</b>	<b>2011 Approved REST Budget</b>	<b>2012 Proposed REST Budget</b>
Residential	\$4,178,457	\$4,670,642
Commercial	\$2,858,280	\$3,517,501
Industrial & Mining	\$1,021,285	\$1,289,076
Lighting (PSHL)	6,115	7,304
<b>Total</b>	<b>\$8,058,022</b>	<b>\$9,477,218</b>

<b>Rate Class</b>	<b>Current Rates Caps</b>	<b>Proposed Rates Caps</b>
Residential	\$5.00	\$6.00
Commercial	\$160.00	\$192.00
Industrial & Mining	\$5,000.00	\$6,000.00
Lighting (PSHL)	\$140.00	\$192.00
<b>Per kWh to all Classes</b>	<b>\$0.008315</b>	<b>\$0.010259</b>

The above described allocation of REST surcharges among customer classes was developed in conjunction with stakeholders. Indeed, in Decision No. 72034 (December 10, 2010), UNS Electric was ordered to “conduct workshops and [sic] other public service corporations and stakeholders concerning reasonable alternatives for the equitable distribution of REST surcharges among customer classes...”

On May 5, 2011, in conjunction with TEP, UNS Electric held a stakeholder meeting where discussion regarding the distribution of REST surcharges among customer classes took place. Representatives from UNS Electric, TEP, Commission Staff, the Town of Oro Valley, the City of Tucson, Pima County, Sunpower of AZ, ARISEA, PEPSolar, Wilson Electric, Technicians for Sustainability, Pima County Interfaith Council and the Green Chamber, Raytheon, CBRE, Solarcity, AzRise, and Venture Catalyst were present, as well as representatives from a private consulting firm. Separate discussions with representatives from

Arizona Public Service Company (“APS”) and Freeport-McMoRan were held following this discussion.

Much of the discussion revolved around the equitable distribution of the REST surcharge based on the percentage amount applied to each customer class, customer caps, and the percentage of load each class had on the utility. There was also discussion over the amount of available funds that each customer class had access to for renewable projects.

Multiple opinions were presented regarding the equitable distribution of REST surcharges, including: (i) leaving the surcharges as currently proposed; (ii) basing them on a matching of the percentage of customer class revenue with the percentage of customer class load, with appropriate caps; (iii) basing the percentage of customer class revenue on the available funds to each customer class with appropriate caps; and (iv) basing them on a per kilo-watt hour basis with no customer cap.

Ultimately, while most groups were of the opinion that other classes should bear more of the REST surcharge burden, it was agreed that the current methodology of determining surcharges was as fair and equitable of a solution as any proposed. As such, no changes are being proposed to the method of surcharge calculation.

## **V. RESEARCH AND DEVELOPMENT.**

In order to support the adoption of renewable energy, UNS Electric dedicates some of its current REST funding towards research and development. The Company has proposed \$50,000 as a budget for research and development. UNS Electric plans to continue its commitment to furthering renewable energy research by participating in the following projects.

### **A. Arizona Research Institute for Solar Energy.**

The AzRise Global Institute at the University of Arizona (“U of A”) conducts fundamental interdisciplinary solar energy research, backed by accurate and realistic economic analyses, for the deployment and practical implementation of solar energy solutions. UNS Electric believes these findings are vital to supporting the REST’s goals. UNS Electric’s REST

dollars spent with AzRise help to further the renewable energy market and help UNS Electric meet its renewable goals. AzRise will be responsible for ongoing data management for the UNS Electric Solar Test Sites, energy storage data evaluation, and ongoing distributed generation production analysis specific to Arizona. These projects represent significant contributions to the local knowledge base that will be required to make the use of solar energy more effective. This project will cost \$50,000.

**B. Compliance with Decision No. 72034.**

As part of Decision No. 72034, UNS Electric was required to “include, as part of future annual REST plan filings, a list of any cases within the previous three calendar years where UNS Electric has received damages or other considerations as a result of non-compliance related to RES contracts.” As of the time of this filing, UNS Electric has received no damages or other considerations as a result of non-compliance related to RES contracts in the previous three years.

UNS Electric was also ordered, as part of Decision No. 72034, to “disclose, as part of future annual REST plan filings, whether its affiliates, its employees, or its directors have any direct financial or other interest in renewable energy projects that are owned or whose output is contracted for by UNS Electric.” As of the time of this filing, UNS Electric has no affiliates, employees, or directors with any direct financial or other interest in renewable energy projects that are owned or whose output is contracted for by UNS Electric.

# EXHIBIT

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Item	2012	2013	2014	2015	2016
REST Requirement	3.50%	4.00%	4.50%	5.00%	6.00%
Net Retail Energy Sales in MWh per Year	1,948,857	1,975,660	2,009,884	2,045,420	2,084,621
Renewable Energy Required - MWh	68,210	79,026	90,445	102,271	125,077
Utility Scale Energy Requirement %	70.00%	70.00%	70.00%	70.00%	70.00%
Utility Scale Energy Requirement MWh	47,747	55,318	63,311	71,590	87,554
Minimum Distributed Energy %	30.00%	30.00%	30.00%	30.00%	30.00%
Minimum Distributed Energy MWh	20,463	23,708	27,133	30,681	37,523
<b>Residential DG</b>					
Minimum Residential Distributed Energy %	15.00%	15.00%	15.00%	15.00%	15.00%
Minimum Residential Distributed Energy MWh cumulative	10,231	11,854	13,567	15,341	18,762
Incremental Residential DG Required MWh (or actual if available)	5,339	1,622	1,713	1,774	3,421
Estimated Residential DG MWh Cumulative (Include Reserved)	10,231	11,854	13,567	15,341	18,762
<b>Commercial DG</b>					
Maximum Commercial Distributed Energy %	15.00%	15.00%	15.00%	15.00%	15.00%
Maximum Commercial Distributed Energy MWh	10,231	11,854	13,567	15,341	18,762
Incremental Commercial DG Required MWh (or actual if available)	5,615	1,622	1,713	1,774	3,421
Estimated Commercial DG MWh Cumulative (Include Reserved)	10,231	11,854	13,567	15,341	18,762
Annual PBI Budget	\$191,386	\$89,236	\$85,638	\$79,827	\$136,838
<b>Residential PV UFI</b>					
Residential PV UFI	\$1.60	\$1.50	\$1.25	\$1.00	\$0.75
<b>Small Commercial PV UFI</b>					
Small Commercial PV UFI	\$1.30	\$1.25	\$1.00	\$0.75	\$0.50
<b>Large Commercial PV PBI</b>					
Large Commercial PV PBI	\$0.125	\$0.110	\$0.100	\$0.090	\$0.080
<b>TEP DG Budget Requirements</b>					
TEP DG Budget Requirements	2012	2013	2014	2015	2016
<b>DG kWh required</b>					
DG kWh required	20,462,995	23,707,923	27,133,435	30,681,302	37,523,180
<b>Commercial DG</b>					
Commercial DG kWh cumulative required	10,231,498	11,853,961	13,566,717	15,340,651	18,761,590
Existing Commercial DG kWh	7,169,325	10,231,498	11,853,961	13,566,717	15,340,651
Commercial DG kWh Required	3,062,173	1,622,464	1,712,756	1,773,933	3,420,939
Small Commercial UFI incremental required	1,224,869	811,232	856,378	886,967	1,710,470
Large Commercial PBI incremental required	1,531,086	811,232	856,378	886,967	1,710,470
Large Commercial new kW	875	464	489	507	977
Small Comm PV %	80.0%	80.0%	80.0%	80.0%	80.0%
Small Comm H2O %	20.0%	20.0%	20.0%	20.0%	20.0%
Small Comm PV kWh	979,895	648,985	685,102	709,573	1,368,376
Small Comm H2O kWh	244,974	162,246	171,276	177,393	342,094
Small Comm PV new kW	560	371	391	405	782
Small Comm PV systems (40 kW average)	8	5	6	6	11
Small Comm H2O systems (20,000 kWh average)	12	8	9	9	17
Small Comm H2O Cost @ \$10,750 per system average	\$ 131,673	\$ 87,207	\$ 92,061	\$ 95,349	\$ 183,875
Small Comm PV Cost	\$ 839,910	\$ 463,561	\$ 391,487	\$ 304,103	\$ 390,964
<b>Residential DG</b>					
Residential DG kWh cumulative required	10,231,498	11,853,961	13,566,717	15,340,651	18,761,590
Existing Residential kWh	7,169,325	10,231,498	11,853,961	13,566,717	15,340,651
Residential incremental kWh required by year	3,062,173	1,622,464	1,712,756	1,773,933	3,420,939
Res PV%	85%	85%	85%	85%	85%
Res H2O%	15.0%	15.0%	15.0%	15.0%	15.0%
Res PV kWh	2,602,847	1,379,094	1,455,843	1,507,843	2,907,798
Res H2O kWh	459,326	243,370	256,913	266,090	513,141
Res PV kw (1750kwh/kw)	1,487	788	832	862	1,615
Res PV systems (6 kW average)	248	131	139	144	404
Res H2O systems (2600 kWh average)	177	94	99	102	197
Res PV Cost	\$ 2,379,746	\$ 1,182,081	\$ 1,039,888	\$ 861,625	\$ 1,211,583
Res H2O Cost @ \$1,500 per system average	\$ 264,996	\$ 140,406	\$ 148,219	\$ 153,513	\$ 296,043
Total Cost Res UFI	\$ 2,644,741	\$ 1,322,486	\$ 1,188,107	\$ 1,015,138	\$ 1,507,625
Total Cost Small Comm UFI	\$ 971,584	\$ 550,768	\$ 483,548	\$ 399,452	\$ 574,840
Total UFI Cost	\$ 3,616,325	\$ 1,873,255	\$ 1,671,655	\$ 1,414,590	\$ 2,082,465
Total Incremental PBI Cost	\$ 191,386	\$ 89,236	\$ 85,638	\$ 79,827	\$ 136,838
Total PBI Cumulative Cost	\$ 1,837,072	\$ 1,926,307	\$ 2,011,945	\$ 2,091,772	\$ 2,228,610
Total DG Incentive Cost	\$ 5,453,397	\$ 3,799,562	\$ 3,683,600	\$ 3,506,362	\$ 4,311,075

# EXHIBIT

2

UNSE Exhibit 2  
2012 Renewable Energy Standard and Tariff

Cost Recovery Factors Definition for 2012		2012	2011
<b>Total REST Budget 2012:</b>		\$ 9,233,874	\$ 8,069,914
<b>Total REST Tariff Collection 2012:</b>		\$ 9,476,715	\$ 8,069,914
<b>Purchased Renewable Energy:</b>			
Above Market Cost of Conventional Generation calculated annually on hourly data per MCCCCG Matrix <sup>1</sup>		\$ 2,126,470	\$ 1,100,000
UNSE owned <sup>2</sup>		\$ 665,169	\$ -
<b>Total</b>		<b>\$ 2,791,639</b>	<b>\$ 1,100,000</b>
<b>Customer Sited Distributed Renewable Energy:</b>			
Up-front Incentive (UFI) (residential) <sup>3</sup>		\$ 2,644,741	\$ 3,680,918
Up-front Incentive (UFI)(commercial) <sup>4</sup>		\$ 971,584	\$ 920,560
Annual Performance-based Incentive (PBI) <sup>5</sup>		\$ 1,837,072	\$ 1,645,686
Annual meter reading cost <sup>6</sup>		\$ 6,250	\$ 3,750
Marketing <sup>7</sup>		\$ 100,000	\$ 118,000
<b>Total</b>		<b>\$ 5,559,647</b>	<b>\$ 6,368,914</b>
<b>Technical Training:</b>			
Schools Vocational Training Program <sup>8</sup>		\$ 300,000	\$ -
UNSE internal and contractor training costs <sup>9</sup>		\$ 50,000	\$ 77,250
<b>Total</b>		<b>\$ 350,000</b>	<b>\$ 77,250</b>
<b>Information Systems Integration Costs</b> <sup>10</sup>		<b>\$ 100,000</b>	<b>\$ 50,000</b>
<b>Metering:</b>			
Direct material cost for DG production meters, labels, disconnects, meter panels, BTU meters <sup>11</sup>		\$ 76,060	\$ 146,000
<b>Total</b>		<b>\$ 76,060</b>	<b>\$ 146,000</b>
<b>Program Labor and Administration</b>			
Internal Labor <sup>12</sup>		\$ 270,529	\$ 232,750
External Labor <sup>13</sup>		\$ 5,000	\$ 15,000
Materials and Supplies <sup>14</sup>		\$ 15,000	\$ 15,000
AZ Solar website <sup>15</sup>		\$ 1,000	\$ 30,000
<b>Total</b>		<b>\$ 291,529</b>	<b>\$ 292,750</b>
<b>Renewable Energy Research and Development:</b>			
Support provided to University research projects (eg. AzRISE) <sup>16</sup>		\$ 50,000	\$ 20,000
Dues and Fees <sup>17</sup>		\$ 15,000	\$ 15,000
<b>Total</b>		<b>\$ 65,000</b>	<b>\$ 35,000</b>
<b>Total Other</b>		<b>\$ -</b>	<b>\$ -</b>
<b>2012 Program Cost (Total Budget)</b>		<b>\$ 9,233,874</b>	<b>\$ 8,069,914</b>
<b>Undercollection of REST Funds from 2010</b>		<b>\$ 242,841</b>	
<b>Grand Total (to be collected in 2012 tariff)</b>		<b>\$ 9,476,715</b>	<b>\$ 8,069,914</b>

**UNSE Exhibit 2**  
**2012 Renewable Energy Standard and Tariff**

**Notes:**

- 1: Premium costs of wholesale purchased renewable energy above the market cost of comparable conventional generation. See Exhibit 4
- 2: ACC approved UNSE build-out plan.
- 3: Residential up-front incentive dollars to purchase RECs for 20 years. See Exhibit 1.
- 4: Small commercial up-front incentive dollars to purchase RECs for 20 years. See Exhibit 1.
- 5: Large commercial dollars to purchase RECs as they are produced. Terms vary between projects. See Exhibit 1.
- 6: Costs for reading production meters for DG systems to verify kWh output and quantify actual RECs produced.
- 7: Marketing materials, mass media, web, etc.
- 8: Approximately 3, 10 kW systems donated to and installed at area schools. Training program curriculum developed for the schools as well.
- 9: Travel associated with siting renewable projects, trade conferences, technical staff training, installer and stakeholder meetings.
- 10: Money allocated to project that will be interface between customers and programs and will interface to billing, work management, geospatial systems and others. Required for administration of DG programs and for technical assessment of impact of DG to system and for REC tracking and reporting.
- 11: All systems producing electricity are metered as are some larger solar thermal systems. Safety devices and labels are also provided. Required for accurate measure of production for REC tracking and required for safety and system reliability.
- 12: Company labor required to manage REST programs. Include supervision, engineering, information technology, program administration, and regulatory reporting.
- 13: Contract labor for assistance with regulatory filings.
- 14: Equipment and material required annually for program administration.
- 15: Annual costs for Arizona Go Solar website.
- 16: Research done by University of Arizona that is important to further development and large scale deployment of renewable energy.
- 17: Renewable energy associations and trade organizations useful for knowledge transfer and communication of best practices.

# EXHIBIT

5

**Exhibit 5**

**UNS Electric, Inc.**

**Renewable Energy Credit Purchase Program**

**2012**

## TABLE OF CONTENTS

Frequently Asked Questions.....	1
Up-Front Incentives: Qualifications, Applications, and Restrictions.....	3
Up-Front Incentives Levels for Solar Electric Residential Projects 30 kW DC or Less and Non-Residential Projects 70 kW DC or less.....	6
Performance Based Incentives: Qualifications, Applications, and Restrictions.....	12
Performance Based Incentive Levels for Non-Residential Solar Electric Projects Greater than 70 kW DC.....	14
Incentive Levels for Residential and Small Non-Residential Solar Water Heating and Space Heating Smaller than 400,000 kWh Equivalent Annual Production Per Year, Non-Residential Solar Pool Heating.....	21
Incentive Levels for Large Non-Residential Solar Water Heating and Space Heating Systems with Annual Production Output Larger than 400,000 kWh Equivalent.....	28
Incentive Levels for Ground Source Heat Pumps – Residential and Non-Residential Applications.....	33
Incentive Levels for Wind Systems Smaller than 1 MW.....	37
Incentive Levels for Non-Residential Solar Daylighting.....	41
Incentive Levels for Additional Technologies with Prescriptive Incentives.....	45
Technologies without Technology Specific Criteria.....	54
Non-Conforming Projects.....	55
Appendix 1: Incentive Summary Tables.....	56
Appendix 2: Glossary of Terms.....	57

# **UNS Electric, Inc.'s Renewable Energy Credit Purchase Program Frequently Asked Questions**

## **What is Distributed Generation?**

Distributed Generation (DG) is defined as electric generation sited at a customer premises, providing electric energy to the customer load on that site or providing wholesale capacity and energy to the local Utility Distribution Company for use by multiple customers in contiguous distribution substation service areas. The generator size and transmission needs shall be such that the plant or associated transmission lines do not require a Certificate of Environmental Compatibility from the Arizona Corporation Commission (ACC).

## **What are Distributed Renewable Energy Resources?**

Distributed Renewable Energy Resources are applications of appropriate technologies that are located at a customer's premises and that displace conventional energy resources that would otherwise be used to provide electricity to Arizona customers.

UNS Electric provides programs consistent with these definitions and generally refers to these programs as DG programs. For more information on these and other definitions, please visit the ACC's Renewable Energy Standard and Tariff webpage at <http://www.cc.state.az.us/divisions/utilities/electric/environmental.asp>.

## **What is Net Metering?**

Net Metering refers to the production of electricity from a qualifying renewable energy electric generator, such as photovoltaic (PV) panels, used to offset electricity provided by UNS Electric, Inc. (UNS Electric). Customers deemed eligible for participation in UNS Electric's Net Metering Tariff will be required to install a bi-directional meter capable of measuring the flow of electricity to and from the customer's premises. Net Metering customers may buy and sell electricity to and from UNS Electric under the applicable terms and tariff rate. In the event that a Net Metering customer carries a negative balance due to the over-production of electricity for the time period specified in the Net Metering Tariff, the customer's remaining credits will be transitioned to a payment at the applicable wholesale rate, and the customer's balance reset to zero.

No systems may exceed 125% of connected load for that meter, where connected load is defined as the maximum demand divided by 0.6. For more information on Net Metering, please see UNS Electric's Green Energy webpage, which can be found at <http://uesaz.com/Green/home/Solar/electric.asp>.

## **Why is UNS Electric involved with DG?**

The ACC, which regulates UNS Electric and utilities like it in Arizona, enacted the Renewable Energy Standard and Tariff (REST) Rules in 2007. These rules require UNS Electric to replace a substantial portion of its retail sales with renewable energy by investing in a variety of projects, including both utility-scale and DG projects. In order to comply with the portion of the REST Rules governing DG projects, UNS Electric purchases Renewable Energy Credits (REC) from eligible customers through their incentive programs. Under these programs, UNS Electric does not own or build the systems that generate these credits, but rather incents them by purchasing the resulting RECs. Pursuant to the REST Rules, one REC is equivalent to 1 kilowatt hour (kWh). For more information on the ACC's REST Rules, please visit the ACC's REST Rules webpage at <http://www.cc.state.az.us/divisions/utilities/electric/environmental.asp>.

## **How does UNS Electric get involved with DG?**

One way in which UNS Electric supports DG projects is by providing residential and non-residential programs for customers with qualifying renewable energy generators to participate in. These programs include a variety of ACC-approved up-front and performance-based incentive payments by technology. These incentives are the

method by which UNS Electric actually purchases a REC. For details, terms, and conditions regarding each qualifying technologies, please see the appropriate sections of this document. Please note that UNS Electric issues incentive payments for RECs; these payments are NOT REBATES. It should also be noted that not every renewable technology system is eligible to receive an incentive.

**Who is eligible for the incentive and how do I apply?**

Any residential or non-residential customer currently connected to UNS Electric's electric service system who installs a qualifying renewable facility, in compliance with the terms and conditions described herein, may apply to participate in one of UNS Electric's DG programs. Alternatively, any UNS Electric-qualified installer may submit the required DG program application on behalf of a qualifying UNS Electric customer.

**What is a UNS Electric-qualified installer?**

A UNS Electric-qualified installer is an installer that has been evaluated by UNS Electric personnel and deemed to have met the prerequisites for qualification. In order to become UNS Electric-qualified, each installer must meet certain UNS Electric requirements, including but not limited to annual submittal of the necessary paperwork contained within the installer's package. Each submittal must include, but is not limited to the following: an Installer's Agreement; a current and valid Registrar of Contractor's (ROC) license; detailed information regarding the installing company; and information regarding any sub-contractors, if applicable. UNS Electric will not, under any circumstances, issue or assign incentive payment(s) to an installer who is not UNS Electric-qualified.

**Where can I find more information?**

For the terms and conditions of participation in any of UNS Electric's DG programs, please consult UNS Electric's Renewable Energy Credit Purchase Program (RECPP), which can be found below, and online at UNS Electric's Green Energy webpage (<http://uesaz.com/Green/home/Solar/electric.asp>). Questions may be directed to 1-877-837-4968.

**What else do I need to know?**

Each of the programs described herein, including incentive amounts and all terms and conditions, are subject to change as dictated by program need and any and all regulatory authorities. Nothing included in UNS Electric's RECPP is intended as a guarantee of funds or qualification for purposes of program participation.

UNS Electric's RECPP does not accommodate non-customer sited projects for any reason. "Solar Farms" or other utility-scale generation projects do not qualify under UNS Electric's RECPP. These projects may participate in UNS Electric's next request for proposals (RFP) for Renewable Energy. Information regarding UNS Electric's next RFP may be found at [www.uesaz.com](http://www.uesaz.com).

UNS Electric's RECPP does not allow for any aggregated or virtual net metering of a customer's load under any circumstance. The incentives described herein must meet the definitions of DG and Renewable Energy Resource as defined by the ACC and contained within the Frequently Asked Questions portion of this document.

## UP-FRONT INCENTIVES: QUALIFICATIONS, APPLICATIONS AND RESTRICTIONS

*UNS Electric's Up-Front Incentive (UFI) programs are limited to Residential and Small Non-Residential Projects only.*

### UFI Qualifications

Qualifying Technology	Size Limit
Residential Solar PV	Less than 30 Kilowatts (kW) Direct Current (DC)
Residential Hot Water & Space Heating	
Residential and Non-Residential Ground Source Heat Pumps	Up to 200 Tons
Wind Systems	Less than 1 Megawatt (MW) Alternating Current (AC)
Small Non-Residential Solar PV	Less than 70 kW DC
Small Non-Residential Hot Water & Space Heating	Less than 400,000 Kilowatt Hours (kWh) of Estimated Annual Savings
Non-Residential Daylighting	
Non-Residential Pool Heating	

### UFI APPLICATION PROCESS

*UNS Electric's UFI application process appears below. UNS Electric requires strict adherence to this process. Any deviation from the requirements below may result in your application being denied. If you are working with an installer or contractor, please ensure that they follow the required processes explained below. UNS Electric will assign payment under its UFI application process to the party that appears on the assignment of payment form. Please work with your installer or contractor prior to beginning the process below to determine who payment should go to.*

1. Submittal of the Completed Reservation/Application Package\* to UNS Electric.

The Reservation/Application Package includes the following items:

- Renewable Energy Application Package Cover Sheet
- Assignment of Payment Form
- IRS Form W-9
- Up-Front Incentive Renewable Energy Credit Purchase Agreement
- For Solar Water Heating Applications:
  - A recent copy of the SRCC OG300 schematic obtained from the SRCC website that includes in the printed view the annual kWh savings estimated.

\*Only the following program applications may be submitted electronically, online at [uesaz.com](http://uesaz.com):

- Residential PV
- Residential Solar Water Heating
- Residential Wind
- Non-Residential Wind

All other program applications, including new construction and solar leasing, require paper applications.

2. Confirmation or Denial of Reservation.

- Once received, UNS Electric will match the online or paper application with the submitted Reservation/Application Package. It is the customer's and/or installer's responsibility to ensure that all forms are filled out completely and correctly. Forms with missing and/or incorrect information are subject to rejection by UNS Electric.
- UNS Electric will evaluate each application for completeness and confirm whether or not reservation funds are available. **All applications are subject to the availability of program funds.** UNS Electric will also verify, where an installer is used, that the installer is a UNS Electric-qualified installer. Provided that the application meets UNS Electric's requirements, and that the installer, if any, is UNS Electric-qualified, and that program funds sufficient to fund the application are available, UNS Electric will issue the customer or installer a reservation confirmation letter and provisionally approve the application. **If no funds are available at the time UNS Electric processes the reservation, UNS Electric will notify the installer or customer and the application will be wait-listed.**

3. Submittal of Jurisdictional Final Inspection.

- Within 120 days from the date of the reservation confirmation letter, customer or installer must submit an application to the appropriate jurisdictional entity for a final inspection of the qualifying system. Failure to obtain a jurisdictional final inspection within 180 days of the date of the reservation confirmation letter will result in the revocation of customer's incentive reservation. If this occurs, the customer or installer must reapply to participate in the program.
- In the event that a jurisdictional final inspection is not completed within 180 days of the date of the reservation confirmation letter, and customer or installer provides proof to UNS Electric that a correctly completed application for a jurisdictional final inspection was made within 120 days of the date of the reservation confirmation letter, UNS Electric will neither process or revoke the customer's reservation for 30 days to allow customer time to confirm with the inspecting jurisdiction when the inspection will occur. Provided that the customer provides UNS Electric with an inspection date within those 30 days, the customer's reservation will be honored. If 30 days elapses with no information from the customer, the reservation will be revoked and customer must reapply to participate in the program.
- For all systems customer or installer is responsible for providing UNS Electric with proof of a passed inspection. For all systems, the installer or customer must submit proof of a passed final inspection to UNS Electric that includes the installation address, scope of work, and inspection status.

4. Submittal of Certificate of Completion Form.

- For all program applications: once UNS Electric has received the approved jurisdictional final inspection, installer or customer must submit the Certificate of Completion Form. For PV systems, please submit this form electronically to [renewables@uesaz.com](mailto:renewables@uesaz.com). For solar water heating, please submit this form to [renewables@uesaz.com](mailto:renewables@uesaz.com).

5. UNS Electric will inspect the system and set the appropriate meters if required (such as for PV).

6. UNS Electric will process the incentive payment upon successful inspection and mail the check to the party indicated on the assignment of payment form. Assignment of Payment forms may only be submitted once. UNS Electric will not pay incentives without complete and accurate receipt of the required documents.

**IMPORTANT NOTES:**

1. UNS Electric reserves the right to modify the business process to better serve customers or to increase efficiency. Please refer to [www.uesaz.com](http://www.uesaz.com) for the most up-to-date information.
2. With the exception of minor system modifications during the procurement process (panel wattage changes of less than 10 watts, alternative inverter, etc), any material changes to a system made after the application is processed will result in cancellation of the existing application and will require a new online application to be submitted. The reservation request may be denied because the request is not in compliance with program requirements (see specific technical sections below).
3. Project extensions will not be granted except as outline herein.
4. Any reservation packets submitted incorrectly will be cancelled as will their corresponding online application. Reapplication may result in a reduction of incentive or unavailable funding.
5. In 2012, UNS Electric will not purchase RECs from systems installed prior to applying for an incentive from UNS Electric. UNS Electric must receive and approve the application and all associated paperwork prior to the system being installed to receive the incentive (“installed” is defined as the date of the final clearance from the appropriate jurisdiction).
6. In order to participate in RECPP, installers must have on file with UNS Electric a signed Installer Agreement Form. This form is available in the Installer’s Corner at [www.uesaz.com](http://www.uesaz.com).
7. All applications for projects that are leases will be treated as commercial projects at \$1 per watt.

**COMMUNITY SOLAR OPTION:**

UNS Electric also offers the Bright Arizona Community Solar Program. This Program is intended to be an alternative for UNS Electric customers who do not wish to operate a distributed generation system, but still want to replace some or all of their electrical purchases with renewable energy. Please see [www.uesaz.com](http://www.uesaz.com) for more information.

## UP-FRONT INCENTIVE LEVELS FOR SOLAR ELECTRIC RESIDENTIAL PROJECTS 30 kW DC OR LESS AND NON-RESIDENTIAL PROJECTS 70 kW DC OR LESS

The UFIs for eligible customers with residential projects 30 kW DC or less and non-residential projects 70 kW DC or less are paid in a one-time payment based on the system's designed capacity.

Table 1 identifies the incentives available for eligible systems.

**Table 1. Dollar per Watt for On-Grid Residential Systems Smaller than 30 kW DC  
and On-Grid Non-Residential Systems 70 kW DC or Less**

YEAR	RESIDENTIAL	SMALL NON-RESIDENTIAL	LEASE SYSTEM
2012	\$1.60	\$1.30	\$1.00
Trigger Rate	\$1.35	\$1.05	\$0.75

### TERMS & RESTRICTIONS

- \*If 60% of the annual budget is reserved on or before June 30, 2012, the trigger rates will become effective immediately upon notifying the Arizona Corporation Commission and will remain in effect for the remainder of the calendar year.
- On-Grid Residential customers will receive a UFI up to a **cap of 30 kW DC**. If a residential system is installed larger than 30 kW DC, UNS Electric will only provide an incentive payment for the first 30 kW DC.
- On-Grid Small non-residential customers will receive a UFI up to a **cap of 70 kW DC**. If a small non-residential system is installed larger than 70 kW DC, it must apply under the large non-residential program.
- The UFI may not exceed 50% of Total System Cost.
- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.
- As described later in this document, **these incentive levels may be decreased because of sub-optimal system positioning.**
- The maximum incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation is approved, the incentive amount reserved will not change as long as the reservation is not cancelled.
- For consumer protection, and in order to minimize program manipulation affecting legitimate solar development, no incentive applications will be accepted where the installed price per watt exceeds \$6.00, or where labor charges are in excess of 200% of the system component costs.
- In return for UNS Electric's payment of a UFI, UNS Electric will be given complete and irrevocable ownership of the Renewable Energy Credits until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year after the system passes the conformance inspection. Operational life during that time frame must be supported by system warranty or planned maintenance schedules.

## **PROJECT FUNDING**

Funds will be made available for reservations on a first-come, first-reserved basis, until annual funding is fully reserved. Reservations which are rejected as a result of insufficient funds will be placed on a waiting list and offered the opportunity to retain their original reservation date for one additional quarter without the need to resubmit application documentation. If the incentive level has changed from the date of the original reservation to the date when the reservation is approved, the new incentive level shall be applied.

UNS Electric will allocate funds to all qualifying technologies applying for residential and non-residential incentives. Non-PV categories may be protected from over spending in PV at the discretion of UNS Electric Program Managers. This would most likely be a 10% carve out for technologies other than PV for both classes of projects.

## **NET METERING**

RECPP incentives can be applied to systems designed to serve only the typical load of the customer with whom the incentive agreement has been established. The assessment of that typical load does not preclude the periodic production of electricity in excess of the customer's demand. All projects must comply with ACC Net Metering Rules.

## **PROJECT REQUIREMENTS AFTER INSTALLATION**

After completing the installation of a Residential Solar Electric project of 30kW DC or less, or Non-Residential Solar Electric project 70 kW DC or less, the customer must continue to provide information to UNS Electric about the system's performance.

All customer systems receiving UFIs are obligated to include a UNS Electric-supplied production meter, which will report system production to UNS Electric in accordance with the regular meter-reading schedule. UNS Electric, at its option, may perform periodic inspections of the system for operation, metered production, and reporting purposes.

## **PROHIBITION OF SYSTEM REMOVAL**

Neither the Qualifying System nor any component thereof may be removed by either the applicant or future owners or occupants of the property until expiration of the Renewable Energy Credit Agreement or December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year following completion of system installation of the renewable energy system. If the Qualifying System or any component thereof is removed by any party in violation of this provision, the customer party to the Renewable Energy Credit Agreement shall immediately reimburse UNS Electric for all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that no additional incentives are provided for any new distributed renewable energy resource system on that site until the original Renewable Energy Credit has expired.

**ATTACHMENT A**  
**SYSTEM QUALIFICATIONS FOR RESIDENTIAL SOLAR ELECTRIC PROJECTS 30 kW DC OR LESS**  
**AND**  
**NON-RESIDENTIAL SOLAR ELECTRIC PROJECTS 70 kW DC OR LESS**

All solar electric generating Customer Systems must meet the following system and installation requirements to qualify for UNS Electric, Inc.'s ("UNS Electric" or the "Company") Renewable Energy Credit Purchase Program ("RECPP"). Capitalized terms not defined herein shall have the meanings ascribed to them in the RECPP Agreement.

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement, which is in conflict with a site-specific governmental requirement, shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

**REQUIRED EQUIPMENT STANDARDS**

1. The Customer System components must be certified as meeting the requirements of IEEE-929 - Recommended Practice for Utility Interface of Photovoltaic Systems.<sup>1</sup>
2. Photovoltaic components must be certified by a nationally recognized testing laboratory as meeting the requirements of UL-1703 - Standard for Flat Plate Photovoltaic Modules and Panels Systems and be covered by a non-prorated manufacturer's warranty of at least 20 years.
3. The inverter must be certified as meeting the requirements of IEEE-1547 - Recommended Practice for Utility Interface of Photovoltaic Systems and it must be UL-1741 certified. Inverters must be covered by a manufacturer's warranty of at least ten years.
4. The Customer System design and installation must meet all requirements of the latest edition of the National Electrical Code, including Article 690 and all grounding, conductor, raceway, over-current protection, disconnect and labeling requirements.
5. All other electrical components must be UL listed.
6. The Customer System and installation must meet the requirements of all federal, state and local building codes and have been successfully inspected by the building official having jurisdiction. Accordingly, the installation must be completed in accordance with the requirements of the latest edition of National

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<sup>1</sup> Some technology-specific criteria reference third party standards. The requirements of those standards are fully applicable when referenced as part of technology specific criteria. UNS Electric recognizes that new standards are likely to develop in the near future for technologies included in the RECPP, and recommends that the new standards are examined for application in this program definition as they become available.

Electrical Code in effect in the jurisdiction where the installation is being completed (NEC), including, without limitation, Sections 200-6, 210-6, 230-70, 240-3, 250-26, 250-50, 250-122, all of Article 690 pertaining to Solar Photovoltaic Systems, thereof, all as amended and superseded.

7. The Customer System must meet Company and Arizona Corporation Commission interconnection requirements for self-generation equipment. See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

## **INSTALLATION REQUIREMENTS**

1. A grid-connected Residential Customer System must have a total solar array nameplate rating of at least 845 watts AC (1,200 watts DC) and no more than 20,000 watts AC (28,400 watts DC).
2. The Customer System installation must meet the Electric Service Requirements 2011 Edition, Section 1.22, as follows:
  - a. "As required by TEP/UES's Interconnection Requirements for Distributed Generation, the customer shall provide and install a disconnect switch to isolate all ungrounded conductors of the generating facility from the TEP/UES system. The switch shall be a gang-operated, load-break device with a visible air-gap in the open position. It shall be rated for the current and voltage requirements of the generating facility and shall be lockable in the open position".
3. The DG utility meter and utility disconnect will be installed within 10' of the main service panel and in a location readily accessible by UNS Electric at all times.
4. Products must be installed according to manufacturers' recommendations.
5. The Customer System photovoltaic panels and modules must face within +/- 100 degrees of true south, and be substantially unshaded from 9 am to 3 pm. System arrays which are facing at an azimuth angle other than optimal as defined or shaded for more than one hour per day will be subject to a reduced amount of buydown payment per Attachment B.
6. The Customer System photovoltaic panels and modules must be fitted at an angle of 0 degrees to 60 degrees from horizontal. System arrays which are fitted with an elevation angle other than optimal as defined will be subject to a reduced amount of buydown payment per Attachment B.
7. For Residential Customer Systems, the Company shall furnish a meter, DG meter socket, and AC disconnect switch in accordance with Section 1.22. The Company shall install the meter. For Non-Residential customer systems, the Company shall furnish and install the meter only. The meter socket and AC disconnect shall be installed in accordance with Section 1.22. Installer must notify UNS Electric of wiring configuration so that Company may provide the appropriate 3-phase meter.
8. Total voltage drop on the DC and AC wiring from the furthest PV module to the AC meter will not exceed 2%.
9. PV panels and DC to AC inverter will be installed with sufficient clearance to allow for proper ventilation and cooling. At a minimum, manufacturer clearance recommendations will be observed. PV modules may be mounted less than 4 inches above any surface and an additional inch of clearance for each foot of continuous array surface area beyond four feet in the direction parallel to the mounting support surface, only in cases when arrays are flush-mounted to roof pitch. Otherwise, the four-inch spacing and an additional inch of clearance for each foot of continuous array surface area minimum is required.

10. Storage Batteries are not allowed as part of the Customer System unless the inverter is a separate component and UNS Electric can locate the DG utility meter at the inverter's output. If configured otherwise, battery losses will adversely reflect in the annual AC metered energy output. Customer's solar energy generation and energy storage system must meet the requirements of 2 and 3 of this Attachment A.
11. The DC to AC inverter used must provide maximum power point tracking for the full voltage and current range expected from the photovoltaic panels used and the temperature and solar insolation conditions expected in your area.
12. The DC to AC inverter must be capable of adjusting to "sun splash" from all possible combinations of cloud fringe effects without interruption of electric production.
13. UNS Electric reserves the right to modify standards as technology changes on a case by case basis, pending independent laboratory analysis, Professional Engineer ("PE") stamp, or UNS Electric engineering analysis.

### **GENERAL REQUIREMENTS**

1. All Customer System installations must be completed in a professional, workmanlike and safe manner.
2. Installation must have been made after January 1, 1997.
3. The Customer must be connected to the Company's electric grid and be a net-metered customer.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. The project must comply with applicable local, state, and federal regulations.
6. Products must be installed according to manufacturers' recommendations.
7. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
8. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
9. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems will require customer supplied metering for Performance Based Incentive ("PBI") payment calculation purposes.
10. PV system components shall be properly labeled, including AC & DC disconnects (if present), solar generation meter, service panel (outside cover), and breakers inside the service panel.
11. The system will in all cases have a material and full labor warranty of at least five years.

## ATTACHMENT B

### SUNSHARE SOLAR ELECTRIC OFF-ANGLE & SHADING ANNUAL ENERGY DERATING CHART FOR RESIDENTIAL SYSTEMS OF 30 kW DC OR LESS AND SMALL NON-RESIDENTIAL SYSTEMS OF 70 kW DC OR LESS

UNSE Up-Front Incentive (UFI) Payment - PV Off-Angle/Azimuth & Shading Derating Chart

		Array Azimuth Angle from Due South																	
		0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255
Array Angle Above Horizontal	0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	5	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	10	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	15	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	20	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	25	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	30	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	35	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	40	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	45	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	50	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	55	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
60	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
65	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
70	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
75	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
80	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
85	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
90	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

Note:  
0 degrees best azimuth is assumed for shading.  
0 degrees azimuth is best at 0 degrees for higher tilt angles of azimuth.

#### Array Shading

For off-angle and shading conditions apply the UFI payment derating factor with the shading derating factor to obtain the array derating factor for the Up-Front Incentive (UFI) payment calculation.

Maximum Morning Shaded Hours	0	1	2	3	4	5	6	7	8
Maximum Evening Shaded Hours	0	1	2	3	4	5	6	7	8
Percentage of Annual Energy =	100%	100%	95%	90%	90%	85%	85%	75%	75%

Qualifying systems using Building Integrated Photovoltaic (“BIPV”) modules of total array capacity of 5 kW DC or less shall receive 90% of the UFI incentive value for PV systems listed in Attachment A. Systems using BIPV modules of total array capacity of greater than 5 kW DC shall be derated based on heating unless the applicant can demonstrate optimal performance.

## PERFORMANCE BASED INCENTIVES: QUALIFICATIONS, APPLICATIONS, AND RESTRICTIONS

*UNS Electric's Performance Based Incentive (PBI) programs are limited to Large Non-Residential Projects only.*

### PBI Qualifications

Non-Residential Qualifying Technology	Size Limit
Solar PV	Greater than 70 Kilowatts (kW) Direct Current (DC)
Biomass/Biogas (Electric)	
Biomass/Biogas – Combined Heat and Power (CHP) (Electric)	
Biomass/Biogas – CHP (Thermal)	
Biomass/Biogas (thermal)	
Biomass/Biogas (cooling)	
Geothermal – (electric)	
Geothermal – (thermal)	
Small Hydro	
Solar Space Cooling	

### PBI APPLICATION PROCESS

*UNS Electric's PBI application process appears below. UNS Electric requires strict adherence to this process. Any deviation from the requirements below may result in your application being denied. If you are working with an installer or contractor, please ensure that they follow the required processes explained below. UNS Electric will assign payment under its PBI application process to the party that appears on the assignment of payment form. Please work with your installer or contractor prior to beginning the process below to determine who payment should go to.*

1. Submittal of the Completed Performance Based Incentive Application to UNS Electric.

The submitted application must include a proposed renewable energy credit (REC) term, price, and payout term in years.

2. Holding of the Completed Application and REC Proposal until Auction Time.

UNS Electric will hold all applications until the next applicable auction time (March or June depending on when the application was received). Once the auction process begins, UNS Electric will open half of its approved budget for the year and funds will be awarded to the most competitive projects based on the following criteria:

- Actual REC price requested
- Annual incentive amount requested
- Terms of payment and REC transfer
- Overall REC price

3. Process for Project Selection.

If a project is selected, the customer will be notified and an acceptance packet will be mailed to them. Included in the acceptance packet is the following:

- REC Agreement
- New Supplier Fact Sheet (provides information on entity receiving incentive payment)
- IRS Form W-9
- Interconnection Application
- Assignment of Payment Form
- Information regarding Demand-Based rates (if applicable)

4. Submittal of Acceptance Paperwork.

Within 180 days from the date the acceptance packet is mailed to the customer, the customer must return all paperwork included as part of the acceptance packet to UNS Electric as proof of advancement of project.

5. Project Completion.

All accepted projects must be complete within 365 days from the date the acceptance packet is mailed to the customer. A project is not considered complete until UNS Electric has received proof of final clearance from local jurisdiction. Once UNS Electric receives proof of jurisdictional final inspection it will perform a commissioning of the completed system. Incentive payments will not be issued until *after* the first full quarter after completion; incentive payments will continue thereafter on a quarterly basis.

**IMPORTANT NOTES:**

1. UNS Electric does not provide any meter sockets, disconnects, et cetera for non-residential installations.
2. If a project is not accepted, it will remain in the queue for the next award period. If there is no award period remaining in the year, the customer will be notified and asked to resubmit in next calendar year.
3. Reservation extensions must be submitted in writing and include the customer's signature. Reservation extensions will only be granted where warranted. UNS Electric reserves the right to evaluate each reservations extension request on a case-by-case basis, for project hardships encountered that are no due to customer fault.
4. UNS Electric requires an Interconnection Inspection (for Grid-Tied Renewable Electrical Systems greater than 70 kW DC)
  - Non-residential grid-tied qualifying systems of electrical generating capacity must submit to and pass an interconnection inspection before the system can be commissioned. UNS Electric conducts the interconnection inspection and will notify the applicant of the results of the inspection. If the system passes the interconnection inspection, the application retains the reservation. The applicant can keep the reservation even if the system fails the initial interconnection inspection, as long as the deficiency is remedied within 30 days from the date of the interconnection inspection.

## PERFORMANCE BASED INCENTIVE LEVELS FOR NON-RESIDENTIAL SOLAR ELECTRIC PROJECTS GREATER THAN 70 kW DC

Non-residential Solar Electric systems greater than 70 kW DC are eligible for performance-based incentives (PBIs). The PBI allows the customer to collect incentive payments in direct relation to the actual system production. Table 2 identifies the incentives available for non-residential Solar Electric systems larger than 70 kW DC.

In all cases, incentive values listed in Table 2 are maximum values. PBIs are awarded through a bid process, which is discussed later in this section. Applicants are encouraged to submit bids requesting incentive amounts less than the maximums listed. Bids requesting a lower level of incentive payment than the maximum will have an increased chance of acceptance in the allocation ranking process. Projects will be reviewed twice during the year, once at the end of March and again at the end of June.

**Table 2. Maximum PBIs for Non-Residential Projects Greater Than 70 kW DC**

70 – 200 kW DC			
YEAR	10-YEAR	15-YEAR	20-YEAR
2012	\$0.125	\$0.125	\$0.125
2010- 400 kW DC			
YEAR	10-YEAR	15-YEAR	20-YEAR
2012	\$0.105	\$0.105	\$0.105
401 kW DC and Greater			
YEAR	10-YEAR	15-YEAR	20-YEAR
2012	\$0.091	\$0.091	\$0.091

### Terms & Restrictions

- There is no incentive cap for non-residential systems other than program funding considerations.
- A PBI cannot exceed 50% of the real project costs, defined as the undiscounted total system cost plus acceptable financing charges. Acceptable finance charges are finance charges used for the PBI incentive cap calculation and cannot exceed the current prime interest rate plus 5%. Financing charges must be disclosed as part of the commissioning package, if not disclosed before.
- The customer must pay at least 15% of the project cost (as defined above), after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.
- The maximum incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.
- In return for UNS Electric's payment of a PBI, UNS Electric will receive complete and irrevocable ownership of the Renewable Energy Credits for the full duration of the PBI Agreement. The agreement duration must fully coincide with the PBI payment schedule and the system must be supported by system warranty or planned maintenance schedules for the term of the agreement

## **PROJECT FUNDING**

Non-residential funds will be committed as bids are accepted; funds may be placed in reserve for later in the year. As a result, the budget may be committed before the end of the year. Funds will be made available to projects based on a ranking generated by lowest expected life cycle credit purchase cost, as provided in the application and verified by UNS Electric, as well as likelihood of construction. Projects submitted to the utility for reservation will be ranked based on a calculated index value for purposes of allocating non-residential funds as proposed in the application and verified by UNS Electric. Lowest lifecycle cost projects will be funded first. Indexing of the non-residential projects will be performed based on the verified incentive values and duration of the proposed agreement in the application for that project. In addition, the bid evaluator assesses the likelihood that the project will be completed. Projects with higher incentive payments result in a higher expected life cycle credit purchase cost and projects that produce more kWh result in a lower expected life cycle credit purchase cost. In the event of a tie in the ranking, when the program would be fully subscribed if both projects were given reservation status, funds will be awarded based on the date of receipt of the completed reservation request.

Reservation requests will be reviewed by the utility twice per year. Once reservation requests are fully ranked each month, notification of reservation approvals and rejections will be made in conformance with the rankings and available funding.

Reservations which are rejected as a result of insufficient program funds may elect to carry forward into the next period and retain the original reservation date. The election must be made at the time of the original application.

## **NET METERING**

RECPP incentives can be applied to systems designed to serve only the typical load of the customer with whom the incentive agreement has been established. The assessment of that typical load does not preclude the periodic production of electricity in excess of the customer's demand. All projects must comply with ACC Net Metering Rules.

## **PROJECT REQUIREMENTS AFTER INSTALLATION**

All customer systems receiving renewable energy self-generation incentives are obligated to include a UNS Electric-supplied production meter, which will report system production to UNS Electric in accordance with the regular meter-reading schedule. UNS Electric, at its option, may perform periodic inspection of the system for operation, metered production, and reporting purposes.

## **INSTALLER QUALIFICATIONS**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

- The installer must possess a valid license on file with the Arizona Registrar of Contractors ("AZROC") with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
- The installer must possess an Arizona business license that is active and in good standing.

- Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

### **PROHIBITION OF SYSTEM REMOVAL**

Neither the Qualifying System nor any component thereof may be removed by any party until expiration of the applicable Renewable Energy Credit Agreement or the last day of the final month of the final full calendar year of the applicable incentive payment term. If the Qualifying System or any component thereof is removed by any party in violation of this provision, the customer party to the Renewable Energy Credit Agreement shall immediately reimburse UNS Electric for all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that no additional incentives are provided for any new distributed renewable energy resource system on that site until the original Renewable Energy Credit Agreement has expired.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

**ATTACHMENT A**  
**QUALIFICATIONS FOR NON-RESIDENTIAL SOLAR ELECTRIC SYSTEMS**  
**GREATER THAN 70 KW DC**

All solar electric generating Customer Systems must meet the following system and installation requirements at the time of project commissioning to qualify for UNS Electric, Inc.'s ("UNS Electric" or the "Company") Renewable Energy Credit Purchase Program ("RECPP"). Capitalized terms not defined herein shall have the meanings ascribed to them in the RECPP Agreement.

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

**EQUIPMENT STANDARDS**

1. The Customer System components must be certified as meeting the requirements of IEEE-929 - Recommended Practice for Utility Interface of Photovoltaic Systems.<sup>2</sup>
2. Photovoltaic components must be certified by a nationally-recognized testing laboratory as meeting the requirements of UL-1703 - Standard for Flat Plate Photovoltaic Modules and Panels Systems; they must also be covered by a non-prorated manufacturer's warranty of at least 20 years.
3. The Customer System design and installation must meet all requirements of the latest edition of the National Electrical Code, including Article 690 and all grounding, conductor, raceway, over-current protection, disconnect and labeling requirements.
4. The inverter must be certified as meeting the requirements of IEEE-1547 - Recommended Practice for Utility Interface of Photovoltaic Systems and it must be UL-1741 certified. Inverters must be covered by a manufacturer's warranty of at least ten years.
5. All other electrical components must be UL listed.
6. The Customer System and installation must meet the requirements of all federal, state and local building codes and have been successfully inspected by the building official having jurisdiction. Accordingly, the installation must be completed in accordance with the requirements of the latest edition of National Electrical Code ("NEC") in effect in the jurisdiction where the installation is being completed ,

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<sup>2</sup> Some technology-specific criteria reference third party standards. The requirements of those standards are fully applicable when referenced as part of technology specific criteria. UNS Electric recognizes that new standards are likely to develop in the near future for technologies included in the RECPP and recommends that the new standards are examined for application in this program definition as they become available.

including, without limitation, Sections 200-6, 210-6, 230-70, 240-3, 250-26, 250-50, 250-122, all of Article 690 pertaining to Solar Photovoltaic Systems, thereof, all as amended and superseded.

7. The Customer System must meet Company and Arizona Corporation Commission interconnection requirements for self-generation equipment.  
See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

## **INSTALLATION REQUIREMENTS**

1. Any Non-Residential Customer System must have a total solar array nameplate rating of more than 1,200 watts DC.
2. The Customer System installation must meet the Electric Service Requirements 2011 Edition, Section 1.22, as follows:  
“As required by TEP/UES’s Interconnection Requirements for Distributed Generation, the customer shall provide and install a disconnect switch to isolate all ungrounded conductors of the generating facility from the TEP/UES system. The switch shall be a gang-operated, load-break device with a visible air-gap in the open position. It shall be rated for the current and voltage requirements of the generating facility and shall be lockable in the open position.”
3. The DG utility meter and utility disconnect will be installed within 10’ of the main service panel and in a location readily accessible by UNS Electric at all times.
4. Products must be installed according to manufacturers’ recommendations.
5. For Non-Residential Customer Systems, Company shall provide the meter only, to be installed in a Customer supplied meter socket to be installed in a readily accessible outdoor location by the Customer between the DC to AC inverter and the connection to the over-current device in/or adjacent to the Customer’s electric service panel.
6. Total voltage drop on the DC and AC wiring from the furthest PV module to the AC meter will not exceed 2%.
7. PV panels and DC to AC inverter will be installed with sufficient clearance to allow for proper ventilation and cooling. At a minimum, manufacturer clearance recommendations will be observed. PV modules may be mounted less than 4 inches above any surface and an additional inch of clearance for each foot of continuous array surface area beyond four feet in the direction parallel to the mounting support surface only in cases when arrays are flush-mounted to roof pitch. Otherwise, the four-inch spacing and an additional inch of clearance for each foot of continuous array surface area minimum is required.
8. Storage Batteries are not allowed as part of the Customer System unless the inverter is a separate component and UNS Electric can locate the DG utility meter at the inverter’s output. If configured otherwise, battery losses will adversely reflect in the annual AC metered energy output.
9. The DC to AC inverter used must provide maximum power point tracking for the full voltage and current range expected from the photovoltaic panels used and the temperature and solar insolation conditions expected in your area.
10. The DC to AC inverter must be capable of adjusting to “sun splash” from all possible combinations of cloud fringe effects without interruption of electric production.

## GENERAL REQUIREMENTS

1. All Customer System installations must be completed in a professional, workmanlike and safe manner.
2. Installation must have been made after January 1, 1997.
3. The Customer must be connected to the Company's electric grid.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. The project must comply with applicable local, state, and federal regulations.
7. Products must be installed according to manufacturers' recommendations.
8. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
9. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
10. PV system components shall be properly labeled, including AC & DC disconnects (if present), solar generation meter, service panel (outside cover), and breakers inside the service panel.
11. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.  
See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.  
For systems above 300kW, transfer-trip protection requirements will be enforced. The customer will be responsible for the costs associated with implementing these requirements.
12. The system will in all cases have a material and full labor warranty of at least five years.

## REQUIREMENTS SPECIFIC TO NON-RESIDENTIAL PV SYSTEMS GREATER THAN 70 kW DC

1. The Non-Residential Customer System shall be operating, substantially complete and have produced an AC output at least 70% of the total array nameplate DC rating at PTC<sup>3</sup>
2. Operation, Maintenance and Repair. The Customer shall be solely responsible for the operation, maintenance and repair of the Non-Residential Customer System and any and all costs and expenses associated therewith. Company will notify Customer of all Non-Residential Customer System repairs the Company determines are reasonably necessary to support proper continued electrical production of the Non-Residential Customer System. The Customer will notify the Company within five (5) business days of its receipt of any such Company repair notice if the repair requires the installation of a new inverter and/or PV module. The Customer shall complete any such repair that affects the Non-Residential Customer System performance and does not require the purchase of a new inverter or PV module(s) within five (5) business days of the Company's notice of the need for such repair. For any

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<sup>3</sup> PTC stands for "PVUSA Test Conditions." These standards are also referenced by the California Energy Commission. PTC conditions are based upon 1,000 W/m<sup>2</sup> solar irradiance, 20 degrees Celsius ambient temperature, and 1 m/s wind speed.

such repair that does require the purchase and installation of a new inverter and/or PV module, the Customer shall promptly commence and diligently pursue such repair to completion, provided, in no event shall such repair take more than thirty (30) days to complete. At all times while Company is receiving the environmental credits from the Non-Residential Customer System, Customer shall clean all PV modules in the Non-Residential Customer System as necessary to keep them free from foreign material that would visibly obscure the modules, including any dirt and/or oils.

3. Non-Residential Customer System Security. At all times during and after installation of the Non-Residential Customer System, the Customer shall use commercially reasonable efforts to provide adequate security to prevent damage or vandalism to the Non-Residential Customer System.
4. Company shall provide Customer with a revenue grade AC meter to be installed between the Non-Residential Customer System and the grid interconnection. This meter will not be used for billing, but shall be used for any official Non-Residential Customer System production output data. Company will retain ownership of the meter and be responsible for its repair if needed.
5. Customer shall provide Company with all documentation reasonably requested by Company to demonstrate to the Commission that any environmental credits transferred under the Agreement were derived from an eligible technology, that the kWh generated are accurately reported and that the environmental credits have not expired or been used by any other entity for any purpose.
6. If certified proof cannot be provided of complete galvanic isolation of any and all DC from the AC output of the inverter(s) used in the Non-Residential Customer System through IEEE-1547 certification of the inverter, the Non-Residential Customer System shall include an isolation transformer installed between the inverter(s) and the grid interconnection. The transformer will be rated at full load continuous operation at 50 degrees C. at 125% of nameplate DC array rating and have an efficiency rating at nameplate DC array rating power of at least 98% as tested. The transformer will have at least one tap each of 2.5% and 5% both above and below the nominal voltage tap.

**INCENTIVE LEVELS FOR  
RESIDENTIAL AND SMALL NON-RESIDENTIAL SOLAR WATER HEATING AND  
SPACE HEATING SMALLER THAN 400,000 KWH EQUIVALENT ANNUAL  
PRODUCTION PER YEAR, NON-RESIDENTIAL SOLAR POOL HEATING**

Solar water heating and space heating in residential and small non-residential and non-residential solar pool heating applications are eligible for up-front incentives (“UFIs”). UFIs are those incentives where the customer receives a one-time payment based on the system’s designed capacity. Table 3 identifies the incentives available for residential and small non-residential solar water heating and space heating systems.

**Table 3. UFI’s for Residential and Small Non-Residential Solar Water Heating and Space Heating**

Year	Residential Incentive Level**	Small Non-Residential Incentive Level**
2012	\$0.50/kWh (max \$1,750)	\$0.50/kWh (max \$200,000)

\*\*Indicates estimated annual kWh production in first year.

**TERMS & RESTRICTIONS**

- Energy savings rating is based on the SRCC OG-300 published rating or the UNS Electric design analysis. Rate applies to forecast/measured first year energy savings only.
- Small non-residential customers will receive a UFI up to a collector system size with output smaller than a 400,000 kWh equivalent. If a small non-residential system is installed beyond that threshold, it must apply under the large non-residential program.
- The UFI may not exceed 50% of total System Cost.
- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.
- The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.
- In return for UNS Electric’s payment of a UFI, UNS Electric will be given complete and irrevocable ownership of the Renewable Energy Credits until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year after the system passes the conformance inspection. Operational life during that time frame must be supported by system warranty or planned maintenance schedules.

**HOW TO DETERMINE THE ANNUAL KWH SAVINGS FOR  
NON-RESIDENTIAL SOLAR POOL HEATERS:**

1. Determine whether or not the system has an OG-100 rating. If it does not, it is not eligible for the program.
2. If it does have an OG-100 rating, find an OG-300 rating for comparable set of collectors. Use Tucson data to find rated annual heat production for domestic water. (This calculation assumes 300 days on which useful heat is produced.)

3. Multiply the annual savings determined by the OG-300 rating by (180/300). This adjustment reflects the fact that pool heaters in Tucson realistically only produce useful heat on 180 days each year. The result is anticipated annual kWh savings for the unit. This is multiplied by PBI level to calculate annual incentive. UNS Electric will retain the right to meter the system.

### **PROJECT FUNDING**

Funds will be made available for reservations on a first-come, first-served basis, until annual funding is reserved. Reservations which are rejected as a result of insufficient funds will be placed on a waiting list and offered the opportunity to retain their original reservation date for one additional quarter without the need to resubmit application documentation. If the incentive level has changed from the date of the original reservation to the date when the reservation is approved, the new incentive level shall be applied.

UNS Electric will allocate funds to all qualifying technologies applying for residential and non-residential incentives. Non-PV categories may be protected from over spending in PV at the discretion of UNS Electric Program Managers. This would most likely be a 10% carve out for technologies other than PV for both classes of projects.

### **INSTALLER QUALIFICATIONS**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

- The installer must possess a valid license on file with the Arizona Registrar of Contractors (“AZROC”) with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
- The installer must possess an Arizona business license that is active and in good standing.
- Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

### **PROHIBITION OF SYSTEM REMOVAL**

Neither the Qualifying System nor any component thereof may be removed by either the applicant or future owners or occupants of the property until expiration of the Renewable Energy Credit Agreement or December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year following completion of system installation of the renewable energy system. If the Qualifying System or any component thereof is removed by any party in violation of this provision, the customer party to the Renewable Energy Credit Agreement shall immediately reimburse UNS Electric for all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that no additional incentives are provided for any new distributed renewable energy resource system on that site until the original Renewable Energy Credit Agreement has expired.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

**ATTACHMENT A**  
**QUALIFICATIONS FOR RESIDENTIAL AND SMALL NON-RESIDENTIAL**  
**SOLAR WATER HEATING AND SPACE HEATING**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

**EQUIPMENT SPECIFICATIONS**

1. Domestic Solar Water Heating systems will be rated by the SRCC and meet the OG-300 system standard. Systems that include OG-100 collectors, but are not certified under OG-300, will need to be verified by submitting either a testing certification for a substantially similar system prepared by a publicly funded laboratory or by submitting an engineering report stamped by a registered third-party professional engineer detailing annual energy savings. Solar Space Heating systems will utilize OG-100 collectors.
2. Solar Space Heating systems will be sized in conformance with the Solar Space Heating Incentive Calculation Procedure (Attachment B). Compliance reporting production will be based on the design energy savings submitted at time of application.
3. Active, open-loop systems are not eligible for RECPP incentives except for active, open-loop systems that have a proven technology or design that limits scaling and internal corrosion of system piping, and includes appropriate automatic methods for freeze protection and prevents stagnation temperatures that exceed 250 degrees Fahrenheit ("F") under all conditions at the location of installation. Details disclosing conformance with this exception shall be submitted as part of the manufacturer's verification documentation.
4. The 'high' limit on all Domestic Water Heating controllers shall be set no higher than 160 degrees F.
5. Active thermal storage for solar space heating systems shall use water as the storage element.
6. Contractors must provide a minimum of a five year equipment warranty as provided by the system manufacturer, including a minimum warranty period of five years for repair/replacement service to the customer.
7. Domestic Water Heating systems that are installed as an addition to an existing system or are submitted as a customer designed system or not certified to OG-300 must be specifically reviewed and approved by the utility.

8. The solar collector, heat exchangers, and storage elements shall have an equipment warranty of at least 5 years to qualify for a UFI and at least five years to qualify either for a UFI or for a PBI.

## **INSTALLATION GUIDANCE**

1. The system shall be installed with a horizontal tilt angle between 20 degrees and 60 degrees (40 and 60 degrees for space heating applications), and an azimuth angle of +/- 60 degrees of due south (+/- 20 degrees for space heating applications). It is recommended that collectors be positioned for optimum winter heating conditions at a minimum tilt angle of 45 degrees above horizontal, or as recommended by the manufacturer for the specific collector type and geographic location of installation. Azimuth or tilt angles outside these parameters may be reviewed and approved by the utility, at their discretion.
2. All systems should be installed such that the energy collection system is substantially unshaded and should have substantially unobstructed exposure to direct sunlight between the hours of 9:00 a.m. and 3:00 p.m. Solar Hot Water de-rating chart may be used to adjust incentive level based upon affected output due to shading.
3. Heat exchange fluid in glycol systems should be tested, flushed and refilled with new fluid as necessary or at a minimum every five years or sooner per manufacturer's recommendations.
4. It is recommended that the anode rod be checked and replaced per manufacturer's recommendations, but no less frequently than every five years.
5. It is recommended that the system design include a timer, switch, and a temperature sensor on the backup element of the storage tank.
6. The collectors and storage tank should be in close proximity to the backup system and house distribution system to avoid excessive pressure or temperature losses.
7. It is recommended that in areas where water quality problems are reported to have reduced the expected life of a solar water heater, that a water quality test is performed for each residence to screen for materials that through interaction with the materials of the proposed solar water heating system may reduce the expected operational life of the system components. The customer should consider contacting the manufacturer to determine if warranty or operational life will be affected.
8. In areas subject to snow accumulation, sufficient clearance will be provided to allow a 12" snowfall to be shed from a solar collector without shadowing any part of the collector.
9. Ball valves shall be used throughout the system. Gate valves shall not be used in any new installation systems.
10. Pipes carrying heated fluids shall be insulated for thermal energy conservation as well as personnel protection when exposed to ambient conditions, although this is highly recommended in either situation.
11. UNS Electric reserves the right to modify standards as technology changes on a case by case basis, pending independent laboratory analysis, Professional Engineer ("PE") stamp, or UNS Electric engineering analysis.

## **GENERAL REQUIREMENTS**

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.

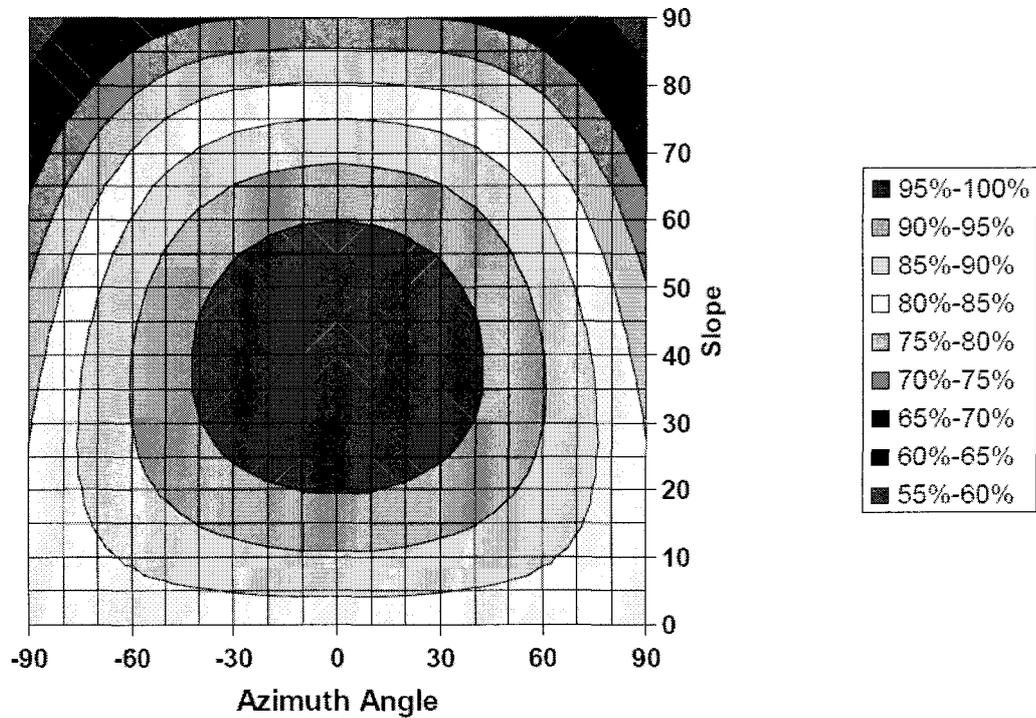
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale on new installations.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment. For these requirements, see ACC Decision Number 69674 located at <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf>
8. Existing systems that are replacing major components may be submitted and reviewed by the utility for the retrofit category of the program's incentive.

**ATTACHMENT B**  
**SOLAR SPACE HEATING UFI INCENTIVE CALCULATION PROCEDURE**

UNS Electric requires specific design documents for solar water/space heating installations. UNS Electric will review the design, compare to similarly situated installations, require data logging/monitoring to be used, and may consult industry experts in determining the actual kWh saved by such systems. UNS Electric reserves the right to change review procedures as technologies advance and/or review protocol is improved.

**ATTACHMENT C**  
**SOLAR HOT WATER OFF-ANGLE AND SHADING ANNUAL ENERGY DERATING CHART**

I  
**Orientation Effect on Annual Output**



If the SHW system falls outside of the 95-100% performance band, then the UFI for the system will be derated. The incentive will be derated based on the decrease in annual energy output anticipated by this chart.

## INCENTIVE LEVELS FOR LARGE NON-RESIDENTIAL SOLAR WATER HEATING AND SPACE HEATING: SYSTEMS WITH ANNUAL PRODUCTION OUTPUT LARGER THAN 400,000 KWH EQUIVALENT

Solar water heating and space heating in large non-residential applications are eligible for performance-based incentives (PBIs). In the case of solar water heating and space heating, the PBI allows the customer to collect incentive payments in relation to the actual system production. Table 4 identifies the maximum incentives available for large non-residential solar water heating and space heating systems.

In all cases, incentive values listed in Table 4 are maximum values. PBIs are awarded through a bid process, which is discussed later in this section. Applicants are encouraged to submit bids requesting incentive amounts less than the maximums listed. Bids requesting a lower level of incentive payment than the maximum will have an increased chance of acceptance in the allocation ranking process.

**Table 4. Maximum Incentives for Large Non-Residential Solar Water Heating and Space Heating for REC Agreements of the Specified Duration\*\***

Year	10-year REC Agreement	15-year REC Agreement	20-year REC Agreement
2012	\$0.057/kWh	\$0.052/kWh	\$0.048/kWh

\*\*Incentive level is based upon \$/kWh equivalent output

### TERMS & RESTRICTIONS

- There is no incentive cap for non-residential systems other than annual program funding considerations.
- A PBI cannot exceed 50% of the real project costs, defined as the undiscounted total system cost plus acceptable financing charges. Acceptable finance charges are finance charges used for the PBI incentive cap calculation and cannot exceed the current prime interest rate plus 5%. Financing charges must be disclosed as part of the commissioning package, if not disclosed before.
- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.
- UNS Electric will require and perform specific design analysis and review on project design estimates.
- The bid evaluator reserves the right to award incentives to solar thermal projects other than those that meet the specifications outlined in Attachment A. Incentives in these cases will be determined by the bid evaluator.
- The maximum incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.
- In return for UNS Electric's payment of a PBI, UNS Electric will receive complete and irrevocable ownership of the Renewable Energy Credits for the full duration of the PBI Agreement. The agreement duration must fully coincide with the PBI payment schedule and the system must be supported by system warranty or planned maintenance schedules for the term of the agreement..

## **PROJECT FUNDING**

Non-residential funds will be committed as bids are accepted; funds may be placed in reserve for later in the year. As a result, the budget may be committed before the end of the year. Funds will be made available to projects based on a ranking generated by lowest expected life cycle credit purchase cost as provided in the application and verified by UNS Electric. Projects submitted to the utility for reservation will be ranked based on a calculated index value for purposes of allocating non-residential funds as proposed in the application and verified by UNS Electric. Lowest lifecycle cost projects will be funded first. Indexing of the non-residential projects will be performed based on the verified incentive values and duration of the proposed agreement in the application for that project. In addition, the bid evaluator assesses the likelihood that the project will be completed. Projects with higher incentive payments result in a higher expected life cycle credit purchase cost and projects that produce more kWh result in a lower expected life cycle credit purchase cost. In the event of a tie in the ranking, when the program would be fully subscribed if both projects were given reservation status, funds will be awarded based on the date of receipt of the completed reservation request.

Reservation requests will be reviewed by the utility on a monthly basis. Once reservation requests are fully ranked each month, notification of reservation approvals and rejections will be made in conformance with the rankings and available funding.

Funds unused in one period will be equally divided among the remaining periods in that year. Funds allocated to non-residential projects will not roll forward from one year to the next. Reservations which are rejected as a result of insufficient program funds may elect to carry forward into the next period and retain the original reservation date. The election must be made at the time of the original application.

## **INSTALLER QUALIFICATIONS**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

- The installer must possess a valid license on file with the Arizona Registrar of Contractors (“AZROC”) with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
- The installer must possess an Arizona business license that is active and in good standing.
- Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

## **PROHIBITION OF SYSTEM REMOVAL**

Neither the Qualifying System nor any component thereof may be removed by any party until expiration of the applicable Renewable Energy Credit Agreement or the last day of the final month of the final full calendar year of the applicable incentive payment term. If the Qualifying System or any component thereof is removed by any party in violation of this provision, the customer party to the Renewable Energy Credit Agreement shall immediately reimburse UNS Electric for all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that no additional incentives are provided for any new distributed renewable energy resource system on that site until the original Renewable Energy Credit Agreement has expired.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

**ATTACHMENT A**  
**QUALIFICATIONS FOR LARGE NON-RESIDENTIAL SOLAR WATER HEATING**  
**AND SPACE HEATING**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

**EQUIPMENT QUALIFICATIONS**

1. Solar collector panels used will have a SRCC OG-100 certification or publicly-funded laboratory documentation showing the panel energy output under controlled and replicable test conditions.
2. If annual energy production is expected to exceed 10,000 kWh or equivalent, the system must include a dedicated performance customer-supplied meter to allow for monitoring of the amount of useful heat produced. Otherwise, compliance reporting production will be based on the design energy savings submitted at time of application.
3. Energy savings and designed output for the system will be verified by submitting either a testing certification for a substantially similar system prepared by a publicly funded laboratory or by submitting an engineering report stamped by a registered professional engineer. The engineering report shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications.
4. The solar collector, heat exchangers and storage elements shall have an equipment warranty of at least five years to qualify for a PBI.
5. The system will in all cases have a material and full labor warranty of at least five years.

**INSTALLATION GUIDANCE**

1. The horizontal tilt angle of the collector panels should be between 20 and 60 degrees (30 and 60 degrees for space heating applications) and an azimuth angle +/- 45 degrees of south. Azimuth or tilt angles outside these parameters may be reviewed and approved by the utility, at their discretion
2. All systems should be installed such that the energy collection system is substantially unshaded and should have substantially unobstructed exposure to direct sunlight between the hours of 9:00 a.m. and 3:00 p.m. Solar Hot Water de-rating chart may be used to adjust incentive level based upon affected output due to shading.

3. The system installation should comply with the design manual.
4. Heat exchange fluid in glycol systems should be tested, flushed and refilled with new fluid as necessary or at a minimum every five years or sooner per manufacturer's recommendations.
5. It is recommended that the anode rod be checked and replaced per manufacturer's recommendations, but no less frequently than every five years.
6. It is recommended that the system design include a timer, switch, and a temperature sensor on the backup element of the storage tank.
7. It is recommended that in areas where water quality problems are reported to have reduced the expected life of a solar water heater, that a water quality test is performed for each residence to screen for materials that through interaction with the materials of the proposed solar water heating system may reduce the expected operational life of the system components. The customer should consider contacting the manufacturer to determine if warranty or operational life will be affected.
8. In areas subject to snow accumulation, sufficient clearance will be provided to allow a 12" snowfall to be shed from a solar collector without shadowing any part of the collector.
9. Each system shall have a comprehensive operation and maintenance manual at the customer's site, which includes a spare parts list, data sheets and flow diagrams indicating operating temperatures and pressures, maintenance schedules and description of testing methods and each customer must complete an initial start up and operation training review with the contractor at the time of system start up
10. UNS Electric reserves the right to modify standards as technology changes on a case by case basis, pending independent laboratory analysis, Professional Engineer ("PE") stamp, or UNS Electric engineering analysis

## **GENERAL REQUIREMENTS**

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.

## INCENTIVE LEVELS FOR GROUND SOURCE HEAT PUMPS - RESIDENTIAL AND NON-RESIDENTIAL APPLICATIONS

Residential and small non-residential ground source heat pump systems are eligible for up-front incentives (“UFIs”). UFIs are those incentives where the customer receives a one-time payment based on the system’s designed capacity. Table 5 identifies the incentives available for GSHP systems.

**Table 5. UFIs for Residential and Non-Residential Ground Source Heat Pump Systems**

Year	Incentive Level
2012	\$500/ton
<p>*Indicates that the incentive for that year has not yet been approved by the Arizona Corporation Commission (ACC). As such, these incentives are tentative and may change pending ACC approval.</p> <p style="text-align: center;"><b>TERMS &amp; RESTRICTIONS</b></p> <ul style="list-style-type: none"> <li>• Customers will receive a UFI up to a cap of 200 tons.</li> <li>• The UFI may not exceed 50% of total System Cost.</li> <li>• The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)</li> <li>• Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.</li> <li>• The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.</li> <li>• In return for UNS Electric’s payment of a UFI, UNS Electric will be given complete and irrevocable ownership of the Renewable Energy Credits until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year after the system passes the conformance inspection. Operational life during that time frame must be supported by system warranty or planned maintenance schedules.</li> </ul>	

### PROJECT FUNDING

Funds will be made available for reservations on a first-come, first-reserved basis, until annual funding is reserved. Reservations which are rejected as a result of insufficient funds will be placed on a waiting list and offered the opportunity to retain their original reservation date for one additional quarter without the need to resubmit application documentation. If the incentive level has changed from the date of the original reservation to the date when the reservation is approved, the new incentive level shall be applied.

### PROJECT REQUIREMENTS AFTER INSTALLATION

After completing the installation of a small distributed energy system, the customer must continue to provide information to UNS Electric about the system’s performance.

All customers receiving renewable energy self-generation incentives are obligated to report system production to UNS Electric in accordance with the reporting schedule established in the program agreement between UNS Electric and the customer. UNS Electric, at its option, may perform periodic inspection of the system for operation, metered production, and reporting purposes.

## **INSTALLER QUALIFICATIONS**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

- The installer must possess a valid license on file with the Arizona Registrar of Contractors (“AZROC”) with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
- The installer must possess an Arizona business license that is active and in good standing.
- Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

## **PROHIBITION OF SYSTEM REMOVAL**

Neither the Qualifying System nor any component thereof may be removed by either the applicant or future owners or occupants of the property until expiration of the Renewable Energy Credit Agreement or December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year following completion of system installation of the renewable energy system. If the Qualifying System or any component thereof is removed by any party in violation of this provision, the customer party to the Renewable Energy Credit Agreement shall immediately reimburse UNS Electric for all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that no additional incentives are provided for any new distributed renewable energy resource system on that site until the original Renewable Energy Credit Agreement has expired.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

## **ATTACHMENT A**

### **QUALIFICATIONS FOR RESIDENTIAL AND NON-RESIDENTIAL GROUND SOURCE HEAT PUMP SYSTEMS**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

#### **EQUIPMENT QUALIFICATIONS**

1. Geothermal system installations involving a regulated boiler or pressure vessel are required to comply with all Arizona state boiler regulations; provide a qualifying boiler inspection identification number; and keep all applicable permits in good standing.
2. Energy savings and designed output for the system will be verified by submitting either a testing certification for a substantially similar system prepared by a publicly-funded laboratory or by submitting an engineering report stamped by a registered third-party professional engineer. The engineering report shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications.
3. Energy production for space heating, space cooling and process heating will be calculated as one kWh of energy per 3,415 BTU of useful heat delivered by the system as measured by a dedicated heat delivery measuring meter and used by the building space or process.
4. The system will have a material and labor warranty of at least five years.
5. The system must meet Arizona DEQ environmental standards.
6. The most current Energy Star Standards must be achieved. These can be found at <http://www.energystar.gov/index.cfm?c=geoheat.prcritgeoheatpumps>.

#### **INSTALLATION GUIDANCE**

Because of the individual nature of geothermal systems, care should be taken to make sure the system complies with all applicable permitting and regulatory requirements including, but not limited to, air emission standards and air permit regulations.

## **GENERAL REQUIREMENTS**

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.

## INCENTIVE LEVELS FOR WIND SYSTEMS SMALLER THAN 1 MW

UNS Electric, Inc. (“UNS Electric” or the “Company”) is committed to assisting our customers in developing their own renewable generation resources, through a balanced and supportive renewable energy distributed generation incentive program. Our goal is to create a program that will provide incentives for affordable, environmentally sensitive, customer-sited renewable energy generation systems to supplement UNS Electric customer’s energy needs. A properly designed system, matched to a customer’s energy use, will provide a reduction in utility bills through the use of renewable resources. This program reflects our commitment to reduce the cost of developing renewable energy resources.

Wind systems smaller than 1 MW are eligible for Up-Front Incentives (UFIs). UFIs are those incentives where the customer receives a one-time payment based on the system’s designed capacity. Table 6 identifies the incentives available for wind systems smaller than 1 MW.

**Table 6. UFIs for Small Wind Systems**

YEAR	ON-GRID INCENTIVE LEVEL
2012	\$1.25/W AC
<b>TERMS &amp; RESTRICTIONS</b>	
<ul style="list-style-type: none"> <li>• UNS Electric customers will receive a UFI up to a cap of 1 MW. If a system is installed larger than 1 MW, it must apply under the utility-scale program.</li> <li>• The UFI may not exceed 50% of total System Cost.</li> <li>• The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)</li> <li>• Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.</li> <li>• The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.</li> <li>• In return for UNS Electric’s payment of a UFI, UNS Electric will be given complete and irrevocable ownership of the Renewable Energy Credits until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year after the system passes the conformance inspection. Operational life during that time frame must be supported by system warranty or planned maintenance schedules.</li> </ul>	

### **PROJECT FUNDING**

Funds will be made available for reservations on a first-come, first-reserved basis, until annual funding is reserved. Reservations which are rejected as a result of insufficient funds will be placed on a waiting list without the need to resubmit application documentation. If the incentive level has changed from the date of the original reservation to the date when the reservation is approved, the new incentive level shall be applied.

### **NET METERING**

All projects must comply with ACC Net Metering Rules.

## **PROJECT REQUIREMENTS AFTER INSTALLATION**

After completing the installation of a small wind project, the customer must continue to provide information to UNS Electric about the system's performance.

All customer systems receiving renewable energy self-generation incentives are obligated to include a UNS Electric-supplied production meter, which will report system production to UNS Electric in accordance with the regular meter-reading schedule. UNS Electric, at its option, may perform periodic inspection of the system for operation, metered production, and reporting purposes.

## **INSTALLER QUALIFICATIONS**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

- The installer must possess a valid license on file with the Arizona Registrar of Contractors ("AZROC") with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
- The installer must possess an Arizona business license that is active and in good standing.
- Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

## **PROHIBITION OF SYSTEM REMOVAL**

Neither the Qualifying System nor any component thereof may be removed by either the applicant or future owners or occupants of the property until expiration of the Renewable Energy Credit Agreement or December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year following completion of system installation of the renewable energy system. If the Qualifying System or any component thereof is removed by any party in violation of this provision, the customer party to the Renewable Energy Credit Agreement shall immediately reimburse UNS Electric for all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that no additional incentives are provided for any new distributed renewable energy resource system on that site until the original Renewable Energy Credit Agreement has expired.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

## ATTACHMENT A

### QUALIFICATIONS FOR WIND SYSTEMS SMALLER THAN 1 MW

A small wind generator is a system with a nameplate capacity rating of One MW or less. The technology criteria described below are intended for small wind generators with a nameplate rating of 50 kW or less. Larger systems will be required to submit a detailed package describing site selection, energy production modeling, and an engineered system design and installation report.

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement which is in conflict with a site-specific governmental requirement shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

#### EQUIPMENT QUALIFICATIONS

1. Eligible small wind systems must be certified and nameplate rated by the Consumer Energy Center ("CEC")<sup>4</sup>. See [www.consumerenergycenter.org/erprebate/equipment.html](http://www.consumerenergycenter.org/erprebate/equipment.html) for a list of certified generators. For grid tied or off-grid wind generators where an inverter is used, the CEC listed nameplate rating of the wind generator will be multiplied by the CEC approved weighted efficiency percentage listed for the inverter in the "List of Eligible Inverters" at [www.consumerenergycenter.org/cgi-bin/eligible\\_inverters.cgi](http://www.consumerenergycenter.org/cgi-bin/eligible_inverters.cgi) to calculate the wind turbine nameplate rating for use in determining the UFI payment.<sup>5</sup>
2. Grid connected inverters used as part of the system shall carry a UL listing certifying full compliance with Underwriter's Laboratory ("UL")-1741.
3. A system must include a dedicated performance meter (provided by UNS Electric) installed to allow for measurement of the amount of electricity produced.
4. The performance meter and utility disconnect for grid tied systems will be installed in a location readily accessible by UNS Electric during normal business hours.
5. The tower used in the installation must be designed by an Arizona registered engineer and must be suitable for use with the wind generator. Tower installation must be designed and supervised by individuals familiar with local geotechnical conditions.
6. To receive a UFI, the wind generator and system must be covered by a manufacturer's warranty of at least 5 years. In all cases, the wind system will have a material and labor warranty of at least five years.

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<sup>4</sup> UNS Electric recommends review of the SWCC standards for rating small wind generators once they become available for purposes of supplanting the CEC requirement in this Technology Criterion.

<sup>5</sup> Inverter outputs are rated in dc Watts and must be converted to ac Watts for incentive calculation purposes.

## **INSTALLATION GUIDANCE**

1. Location: a wind turbine hub should be at least 20 feet above any surrounding object and at least 28 feet above the ground within a 250-foot radius. Wind generators should be installed in locations with an elevation at or above the general elevation of the surrounding terrain.
2. Lot Size: should be one-half acre at minimum. Municipalities and public facilities such as schools and libraries are exempt from the minimum lot size requirements.

## **GENERAL REQUIREMENTS**

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. Wind system components shall be properly labeled, including AC & DC disconnects (if present), wind generation meter, service panel (outside cover), and breakers inside the service panel.
8. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.  
See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

## INCENTIVE LEVELS FOR NON-RESIDENTIAL SOLAR DAYLIGHTING

Non-residential solar daylighting systems are eligible for up-front incentives (“UFIs”). Table 7 identifies the incentives available for non-residential daylighting systems.

**Table 7. UFIs for Non-Residential Daylighting Systems**

Year	Incentive Level
2012	\$0.18/kWh savings during first five years
<b>TERMS &amp; RESTRICTIONS</b>	
<ul style="list-style-type: none"> <li>• The per-kWh incentive applies only to estimated energy savings during the first five years of project operation.</li> <li>• The UFI may not exceed 50% of total System Cost.</li> <li>• The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)</li> <li>• Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.</li> <li>• As described later in this document, these incentive levels may be decreased because of sub-optimal system positioning.</li> <li>• The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.</li> <li>• In return for UNS Electric’s payment of a UFI, UNS Electric will be given complete and irrevocable ownership of the Renewable Energy Credits until December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year after completion of installation of the system. Operational life during that time frame must be supported by system warranty or planned maintenance schedules.</li> </ul>	

### PROJECT FUNDING

Funds will be made available for reservations on a first-come, first-reserved basis, until annual funding is reserved. Reservations which are rejected as a result of insufficient funds will be placed on a waiting list and offered the opportunity to retain their original reservation date for one additional quarter without the need to resubmit application documentation. If the incentive level has changed from the date of the original reservation to the date when the reservation is approved, the new incentive level shall be applied.

Funds unused in one period will be equally divided among the remaining periods in that year. Funds allocated to non-residential projects will not roll forward from one year to the next. Reservations which are rejected as a result of insufficient program funds may elect to carry forward into the next period and retain the original reservation date. The election must be made at the time of the original application.

### INSTALLER QUALIFICATIONS

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

- The installer must possess a valid license on file with the Arizona Registrar of Contractors (“AZROC”) with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.
- The installer must possess an Arizona business license that is active and in good standing.
- Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

### **PROHIBITION OF SYSTEM REMOVAL**

Neither the Qualifying System nor any component thereof may be removed by either the applicant or future owners or occupants of the property until expiration of the Renewable Energy Credit Agreement or December 31<sup>st</sup> of the 20<sup>th</sup> full calendar year following completion of system installation of the renewable energy system. If the Qualifying System or any component thereof is removed by any party in violation of this provision, the customer party to the Renewable Energy Credit Agreement shall immediately reimburse UNS Electric for all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that no additional incentives are provided for any new distributed renewable energy resource system on that site until the original Renewable Energy Credit Agreement has expired.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

## **ATTACHMENT A**

### **QUALIFICATIONS FOR NON-RESIDENTIAL SOLAR DAYLIGHTING**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement, which is in conflict with a site-specific governmental requirement, shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

#### **EQUIPMENT QUALIFICATIONS**

All systems shall include the following components as part of the day lighting system:

1. Skylights must adhere to the 2009 International Energy Conservation Code with regard to the U-factor and solar heat gain coefficient and must have a minimum visible transmittance based on the CPUC Savings by Design program (Note: U-value and SHGC ratings should be based on a 20 degree ratings, now standard through the NFRC):
  - Maximum U-factor of 0.75
  - Maximum solar heat gain coefficient of 0.35
  - Minimum visible transmittance of 0.45
2. Skylight can be in a toplighting configuration only.
3. Skylight area may not exceed 3% of the gross roof area.
4. Skylights must be certified by the National Fenestration Rating Council ("NFRC").
5. If artificial lighting systems remain a part of the installation, the system shall include automated lighting control(s) which are programmed to keep electric lights off/dimmed during daylight hours of sufficient solar insolation to provide minimum design illumination levels.
6. The system will have a material and labor warranty of at least five years.

#### **INSTALLATION GUIDANCE**

All systems should be installed such that the skylight dome is substantially unshaded and have substantially unobstructed exposure to direct sunlight between the hours of 9:00 a.m. and 3:00 p.m.

## GENERAL QUALIFICATIONS

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment. See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

**INCENTIVE LEVELS FOR  
ADDITIONAL TECHNOLOGIES WITH PRESCRIPTIVE INCENTIVES:**

**(1) NON-RESIDENTIAL BIOMASS/BIOGAS OR GEOTHERMAL SPACE HEATING, PROCESS HEATING, OR SPACE COOLING; (2) BIOMASS/BIOGAS, HYDRO OR GEOTHERMAL ELECTRIC; AND (3) SOLAR SPACE COOLING**

The additional distributed energy technologies in residential and small non-residential applications are eligible for performance-based incentives (“PBIs”). The PBI allows the customer to collect incentive payments in direct relation to the actual system production. These incentive levels are specific to each of the groups of technologies. Table 8 summarizes the incentive levels for these technologies for REC agreements signed in 2012;

In all cases, incentive values listed in Table 8. PBIs are awarded through a bid process, which is discussed later in this section. Applicants are encouraged to submit bids requesting incentive amounts less than the maximums listed. Bids requesting a lower level of incentive payment than the maximum will have an increased chance of acceptance in the allocation ranking process.

**Table 8. Maximum Incentives for Additional Technologies for 2012**

TECHNOLOGY/APPLICATION	10-YEAR REC AGREEMENT SIGNED IN 2012 (\$/KWH)	15-YEAR REC AGREEMENT SIGNED IN 2012 (\$/KWH)	20-YEAR REC AGREEMENT SIGNED IN 2012 (\$/KWH)
Biomass/Biogas (Electric)	\$0.060	\$0.056	\$0.054
Biomass/Biogas – CHP (Electric) <sup>3</sup>	\$0.035	\$0.032	\$0.031
Biomass/Biogas – CHP (Thermal) <sup>3</sup>	\$0.018	\$0.017	\$0.016
Biomass/Biogas (thermal)	\$0.015	\$0.014	\$0.013
Biomass/Biogas (cooling)	\$0.032	\$0.030	\$0.029
Geothermal – (electric)	\$0.024	\$0.022	\$0.022
Geothermal – (thermal)	\$0.048	\$0.045	\$0.043
Small Hydro	\$0.060	\$0.056	\$0.054
Solar Space Cooling	\$0.090	\$0.085	\$0.080

\*Indicates in 1<sup>st</sup> year savings.

**TERMS & RESTRICTIONS**

- There is no incentive cap for non-residential systems other than annual program funding considerations.
- A PBI cannot exceed 50% of the real project costs, defined as the undiscounted total system cost plus acceptable financing charges. Acceptable finance charges are finance charges used for the PBI incentive cap calculation and cannot exceed the current prime interest rate plus 5%. Financing charges must be disclosed as part of the commissioning package, if not disclosed before.
- The customer must pay at least 15% of the project cost, after other government incentives (e.g., tax credits) are considered. (See explanation of incentive calculation below.)
- The CHP incentives may be used in combination for the appropriate components of one system.
- The solar space heating and cooling incentives may be used in combination for the appropriate components of the system.
- Systems may not be eligible to receive RECPP incentives if other utility incentives are applied.

- System Cost for a solar space heating system will not include the cost of any passive thermal storage or the cost of the building heating system itself. It will include the cost of new materials and installation of active thermal storage, expansion tanks, controls, tempering valves, piping, vents, drains, safety valves and all freeze protection.
- The incentive amount will be calculated at the time the application is approved for reservation. If federal or state incentives change during the period of time after the reservation approval, the incentive amount reserved will not be changed as long as the reservation is not cancelled.
- In return for UNS Electric's payment of a PBI, UNS Electric will receive complete and irrevocable ownership of the Renewable Energy Credits for the full duration of the PBI Agreement. The agreement duration must fully coincide with the PBI payment schedule and the system must be supported by system warranty or planned maintenance schedules for the term of the agreement.

## **PROJECT FUNDING**

Non-residential funds will be committed as bids are accepted; funds may be placed in reserve for later in the year. As a result, the budget may be committed before the end of the year. Funds will be made available to projects based on a ranking generated by lowest expected life cycle credit purchase cost as provided in the application and verified by UNS Electric, as well as likelihood of construction. Projects submitted to the utility for reservation will be ranked based on a calculated index value for purposes of allocating non-residential funds as proposed in the application and verified by UNS Electric. Lowest lifecycle cost projects will be funded first. Indexing of the non-residential projects will be performed based on the verified incentive values and duration of the proposed agreement in the application for that project. In addition, the bid evaluator assesses the likelihood that the project will be completed. Projects with higher incentive payments result in a higher expected life cycle credit purchase cost and projects that produce more kWh result in a lower expected life cycle credit purchase cost. In the event of a tie in the ranking, when the program would be fully subscribed if both projects were given reservation status, funds will be awarded based on the date of receipt of the completed reservation request.

Reservation requests will reviewed by the utility on a monthly basis. Once reservation requests are fully ranked each month, notification of reservation approvals and rejections will be made in conformance with the rankings and available funding.

Funds unused in one period will be equally divided among the remaining periods in that year. Funds allocated to non-residential projects will not roll forward from one year to the next. Reservations which are rejected as a result of insufficient program funds may elect to carry forward into the next period and retain the original reservation date. The election must be made at the time of the original application.

## **INSTALLER QUALIFICATIONS**

All systems receiving incentives under the RECPP must be installed by a qualified installer. The following requirements must be submitted by the applicant as part of the reservation request. UNS Electric will verify that the installer meets the following minimum qualifications prior to confirming a reservation request:

- The installer must possess a valid license on file with the Arizona Registrar of Contractors ("AZROC") with a license classification appropriate for the technology being installed. Alternatively, the installer must identify use of a contractor holding an appropriate license on file with the AZROC for the technology being installed. A copy of the AZROC license must be provided as part of the reservation request.

- The installer must possess an Arizona business license that is active and in good standing.
- Installers may request that the above information be retained on file with UNS Electric; however, under this option the installer must certify that the information on file remains current with the submission of each reservation request. Information on file must be renewed yearly.

### **PROHIBITION OF SYSTEM REMOVAL**

Neither the Qualifying System nor any component thereof may be removed by any party until expiration of the applicable Renewable Energy Credit Agreement or the last day of the final month of the final full calendar year of the applicable incentive payment term. If the Qualifying System or any component thereof is removed by any party in violation of this provision, the customer party to the Renewable Energy Credit Agreement shall immediately reimburse UNS Electric for all incentive amounts paid by UNS Electric to customer or on behalf of customer to an authorized third party.

In addition, if a Qualified System is removed, UNS Electric shall monitor that specific customer site to ensure that no additional incentives are provided for any new distributed renewable energy resource system on that site until the original Renewable Energy Credit Agreement has expired.

UNS Electric shall attempt to monitor the number of missing or non-working distributed generation systems and shall summarize its observations in its annual Compliance Report.

## **ATTACHMENT A**

### **QUALIFICATIONS FOR NON RESIDENTIAL APPLICATIONS OF BIOMASS/ BIOGAS OR GEOTHERMAL SPACE HEATING**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement, which is in conflict with a site-specific governmental requirement, shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

#### **EQUIPMENT QUALIFICATIONS**

1. Biomass/Biogas or geothermal system installations involving a regulated boiler or pressure vessel are required to comply with all Arizona state boiler regulations; provide a qualifying boiler inspection identification number; and keep all applicable permits in good standing.
2. Energy savings and designed output for the system will be verified by submitting either a testing certification for a substantially similar system prepared by a publicly funded laboratory or by submitting an engineering report stamped by a registered professional engineer. The engineering report shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications.
3. Energy production for space heating, space cooling and process heating will be calculated as one kWh of energy per 3,415 BTU of useful heat delivered by the system as measured by a dedicated heat delivery measuring meter and used by the building space or process.
4. The system will have a material and labor warranty of at least five years.
5. The system must meet Arizona DEQ environmental standards.

#### **INSTALLATION GUIDANCE**

Because of the individual nature of biomass/biogas or geothermal systems, care should be taken to make sure the system complies with all applicable permitting and regulatory requirements including, but not limited to, air emission standards and air permit regulations.

## GENERAL QUALIFICATIONS

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.  
See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

## **ATTACHMENT B**

### **QUALIFICATIONS FOR BIOMASS/BIOGAS, HYDRO, OR GEOTHERMAL ELECTRIC**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement, which is in conflict with a site-specific governmental requirement, shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

#### **EQUIPMENT QUALIFICATIONS**

1. Biomass/Biogas, Hydro or Geothermal system installations involving a regulated boiler or pressure vessel are required to comply with all Arizona state boiler regulations; provide a qualifying boiler inspection identification number; and keep all applicable permits in good standing.
2. System must include a dedicated performance meter to allow for monitoring of the amount of electricity produced.
3. Pre-operational/or pre-commissioning energy savings and design output for the system will be verified by submitting either a testing certification for a substantially similar system prepared by a publicly funded laboratory or by submitting an engineering report stamped by a qualified registered professional engineer. The engineering report shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications.
4. The system will have a material and labor warranty of at least five years.
5. The system must meet Arizona DEQ environmental standards.

#### **INSTALLATION GUIDANCE**

Because of the individual nature of biomass/biogas hydro or geothermal systems, care should be taken to make sure the system complies with all applicable permitting and regulatory requirements including, but not limited to, air emission standards and air permit regulations.

## **GENERAL QUALIFICATIONS**

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment. See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

## **ATTACHMENT C**

### **QUALIFICATIONS FOR SOLAR SPACE COOLING**

The following equipment qualifications listed are mandatory requirements which must be met at the time of project commissioning to receive a RECPP incentive. The installation guidance is intended to provide consumers with information on installation and operation practices which are most likely to support achieving the system's designed output. Installation guidance is mandated in order for a project to receive a RECPP incentive, as it does reflect both industry and UNS Electric concurrence on those practices which are important for a technology to best achieve the designed output. In the future, additional installation guidance items may be considered for inclusion as part of the equipment qualifications.

UNS Electric acknowledges that many regulations and site-specific requirements may apply to the installation of renewable energy technologies. UNS Electric agrees that no requirement imposed by these technology criteria shall be imposed in conflict with any other governmental requirements. Any RECPP-based requirement, which is in conflict with a site-specific governmental requirement, shall be detailed in the reservation request. All qualifying systems must adhere to the following requirements in addition to the RECPP program requirements:

#### **EQUIPMENT QUALIFICATIONS**

1. The minimum cooling capacity of the system will be 120,000 BTU (10 tons) per hour.
2. Solar collector panels used will have a Solar Rating and Certification Corporation ("SRCC") OG-100 rating or laboratory documentation showing the panel energy output under controlled and replicable test conditions.
3. Energy savings and designed output for the system will be verified by submitting either a testing certification for a substantially similar system prepared by a publicly funded laboratory or by submitting an engineering report stamped by a registered professional engineer. The engineering report shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications.
4. System must include a dedicated performance meter to allow for monitoring of the amount of heat input to the thermal cooling device or system. Energy production will be calculated at one kW-hr per 3,415 BTU of metered heat delivered to the thermal cooling device or system.
5. The system will have a material and labor warranty of at least five years.
6. UNS Electric reserves the right to modify standards as technology changes on a case by case basis, pending independent laboratory analysis, Professional Engineer ("PE") stamp, or UNS Electric engineering analysis

#### **INSTALLATION GUIDANCE**

1. The horizontal tilt angle of the collector panels should be between 20 and 60 degrees and an azimuth angle should be between +/- 45 degrees of south.
2. All systems should be installed such that the energy collection system is substantially unshaded and should have substantially unobstructed exposure to direct sunlight between the hours of 9:00 a.m. and 3:00 p.m.
3. The system installation should comply with the design manual.

## **GENERAL QUALIFICATIONS**

1. The project must comply with applicable local, state, and federal regulations.
2. Products must be installed according to manufacturers' recommendations.
3. Installations must meet applicable governmental statutes, codes, ordinances, and accepted engineering and installation practices.
4. Systems must be permitted and inspected by the jurisdiction having authority over construction projects in the customer's locale.
5. All major system components must be new and must not have been previously placed in service in any other location or for any other application.
6. All renewable electricity generation systems must include a dedicated performance meter (provided by UNS Electric) which allows for measurement of system energy production. Certain other non-electric renewable energy production systems, noted below, will require customer supplied metering for PBI payment calculation purposes.
7. If the qualifying system is grid-tied, the system must meet Arizona Corporation Commission Interconnection Requirements for Self-Generation Equipment.  
See <http://images.edocket.azcc.gov/docketpdf/0000074361.pdf> for these requirements.

## **TECHNOLOGIES WITHOUT TECHNOLOGY SPECIFIC CRITERIA**

Technology specific criteria have not yet been developed for the following qualifying technologies:

- Fuel Cells
- Other

For applicants requesting incentives for these technologies or for applicants requesting installation of a technology with specific project technology criteria, but where some criteria cannot be met, the applicant will need to submit design and output documentation.

Applicants installing these systems will, at a minimum, need to provide an energy savings and designed output report for the system. The report must include either a testing certification for a substantially similar system prepared by a publicly funded laboratory or an engineering report stamped by a qualified registered professional engineer. The engineering report and/or testing certification shall provide a description of the system and major components, design criteria and performance expectations, applicable standards and/or codes, and a brief history of components in similar applications. Additional information may be required as part of the RECPP requirements.

## **NON-CONFORMING PROJECTS**

Non-conforming projects will be identified as the Program evolves. Incentive levels for such projects will be calculated based on UNS Electric engineering analysis, independent laboratory analysis, and/or professional engineering (“PE”) stamps. Non-conforming projects that prove combined economic and renewable energy value will be allowed appropriately calculated incentives within the RECPP.

## Appendix 1: Incentive Summary Tables

### RECPP – CONFORMING PROJECT INCENTIVE MATRIX

2012 Program Year

Technology/Application	UP FRONT INCENTIVE <sup>1</sup> 20-Year REC Agreement	10-Year REC Agreement <sup>2</sup> 10-Year Payment (\$/kWh)	15-Year REC Agreement <sup>2</sup> 15-Year Payment (\$/kWh)	20-Year REC Agreement <sup>2</sup> 20-Year Payment (\$/kWh)
BIOMASS/BIOGAS (Electric)	NA	0.060	0.056	0.054
BIOMASS/BIOGAS – CHP (Electric) <sup>3</sup>	NA	0.035	0.032	0.031
BIOMASS/BIOGAS – CHP (Thermal) <sup>3</sup>	NA	0.018	0.017	0.016
BIOMASS/BIOGAS (thermal)	NA	0.015	0.014	0.013
BIOMASS/BIOGAS (cooling)	NA	0.032	0.030	0.029
DAYLIGHTING (Non-Residential)	\$0.18/kWh <sup>7</sup> See this note for clarification	NA	NA	NA
GEOHERMAL – (electric)	NA	0.024	0.022	0.022
GEOHERMAL – (thermal)	NA	0.048	0.045	0.043
GROUND SOURCE HEAT PUMP – (cooling)	\$500/ton	NA	NA	NA
SMALL HYDRO	NA	0.060	0.056	0.054
SMALL WIND (grid-tied) <sup>4</sup>	\$1.25/Watt AC	NA	NA	NA
SOLAR ELECTRIC:				
RESIDENTIAL (GRID-TIED)	\$1.60/Watt DC <sup>8</sup>	NA	NA	NA
NON-RESIDENTIAL (GRID-TIED) 70 kW DC or less	\$1.30/Watt DC <sup>8</sup>	NA	NA	NA
NON-RESIDENTIAL (GRID-TIED) 71 - 200 kW DC	NA	0.125	0.125	0.125
NON-RESIDENTIAL (GRID-TIED) 201- 400 kW DC	NA	0.105	0.105	0.105
NON-RESIDENTIAL (GRID-TIED) 401 kW DC and Greater	NA	0.091	0.091	0.091
SOLAR SPACE COOLING <sup>5</sup>	NA	0.090	0.085	0.080
NON-RESIDENTIAL SOLAR WATER HEATING/SPACE HEATING <sup>5,9,10</sup> (400,000 annual kWh output production equivalent or less)	\$0.50/kWh	NA	NA	NA
RESIDENTIAL SOLAR WATER/SPACE HEATING <sup>6,9,10</sup>	\$0.50/kWh	NA	NA	NA
NON-RESIDENTIAL POOL HEATING <sup>10</sup>	\$0.50/kWh	NA	NA	NA

Notes:

- 1) Residential projects are eligible for an up front incentive (UFI). UFI payments cannot exceed 50% of the cost of renewable energy equipment.
- 2) Non-residential systems 70 kW AC or less are UFI only. Non-residential greater than 70 kW AC are PBI only. The total of payments under a production based incentive cannot exceed 50% of the project costs for any project.
- 3) The CHP incentives may be used in combination for the appropriate components of one system.
- 4) This UFI applies to a maximum system size of 1 MW.
- 5) The solar space heating and cooling incentives may be used in combination for the appropriate components of one system.
- 6) This category includes both traditional water heating and those systems combined with residential solar water heating used for space heating. Space heating applications require a report detailing energy saving for the complete system.
- 7) Rate applies to measured first five years of energy savings only. Payment is made up-front at beginning of 1<sup>st</sup> year.
- 8) Some UFI based installations will require an adjustment of the incentive as detailed in the PV Incentive Adjustment Chart.
- 9) Energy savings rating is based on the SRCC OG-300 published rating or the UNS Electric-RECPP Space Heating Calculator. The customer contribution must be a minimum of 15% of the project cost after accounting for and applying all available Federal and State incentives.
- 10) Rate applies to forecast/estimated first year energy savings only.

## Appendix 2: Glossary of Terms

**ACC** – Arizona Corporation Commission.

**AZROC** – Arizona Registrar of Contractors.

**Applicant** – Utility customer of record for the Utility Revenue Meter located at the installation site; a builder of the structure (residential or non-residential) who will reserve and install the Qualifying system; or for an off-grid Qualifying System, the property owner for the installation site located within a Utility's service territory.

**Arizona Business License** – A business license issued by the ACC.

**Cancelled** – Reservation Status indicating that a Reservation has been terminated, funding is no longer allocated, and the utility has removed the reservation from the funding queue.

**Cancellation** – The termination of the Reservation.

**Commissioned** – Qualifying System certified to be in operation.

**Commissioning Package** – Written verification signed by the installer and the customer confirming that the system has been installed in conformance with the approved reservation and that the system is ready for operation.

**Conforming Project** – Any project utilizing a renewable technology listed in Attachment D.

**Conformance Inspection** – Inspection performed by the utility to verify that the system has been installed and operates in conformance with the Reservation application.

**Customer** – Utility customer of record for the Utility Revenue Meter located at the installation site or a builder of the structure (residential or non-residential) who will reserve and install the Qualifying System.

**Extension** – The extension of the Reservation Timeframe.

**Installer** – The entity or individual responsible for the installation of a qualifying system.

**Interconnection Inspection** – Inspection performed by the utility to confirm that the system can be safely interconnected to the power grid.

**Non-Conforming Project** – Non-conforming projects include, but are not limited to, projects with staged completion dates, multi-customer or multi-system projects, projects involving more than one technology, projects requiring new or unique agreement terms, projects with technologies for which qualification standards have not been developed or projects requiring non-standard timeframes.

**Performance Based Incentive (“PBI”)** – Incentive based on a rate per actual kWh output or on equivalent kWh of energy savings.

**Project Costs** – System Costs plus financing costs.

**Proof of Project Advancement** – Documentation demonstrating that a project is progressing on schedule and is staged for Commissioning on or before the end of the Reservation Timeframe.

**Qualifying System** – Distributed renewable energy systems meeting the qualifications for production of qualified Renewable Energy Credits in Arizona acceptable to the Arizona Corporation Commission as they may be defined for affected utilities to meet any renewable energy standards.

**Renewable Energy Credit (“REC”)** – One Renewable Energy Credit is created for each kWh, or kWh equivalent for non-generating resources, derived from an eligible renewable energy resource. RECs shall include all environmental attributes associated with the production of the eligible renewable energy resource.

**Reservation** – A dollar amount committed by the utility to fund a project if all program requirements are met.

**Reservation Status** – Indicator relating to approval or denial of a Reservation request. If a Reservation is approved, the Reservation Status is Reserved. If a Reservation request is denied, the Reservation Status is either Cancelled or Wait Listed.

**Reserved** – Status indicating the acceptance of a Reservation request.

**Reservation Timeframe** – The duration of the utility’s funding commitment for a Reservation.

**System Costs** – Costs associated with the Qualifying System components, direct energy distribution, system control/metering, and standard installation costs directly related to the installation of the Qualifying System.

**Up Front Incentive (“UFI”)** – One time incentive payment based on system capacity or estimated energy kWh production rather than on measured system output.

**Wait List** – Status indicating Applicant has met program requirements, but the Utility has insufficient funding to commit to funding the project.